LIBRARY OF CONGRESS
294891
AUG 13 1894
SMITHSONIAN DEPOSIT.

THE PAPER TRADE JOURNAL.

"The Consumption of Paper is the Measure of a People's Culture."

VOLUME XXIII.—NO. 32. NEW YORK, AUGUST 11, 1894. WHOLE NUMBER 1058.

Trade Topics.

Special Uses for Spliced Belts.

[WRITTEN FOR THE PAPER TRADE JOURNAL.]

By Sanford E. Thompson.

Spliced belts, especially spliced rubber belts, are comparatively little used around pulp and paper mills, but there are many places where they might be put in to advantage. In a great many mills it is necessary to have a spliced belt with an idler as a belt tightener for the main driving belt—that is, the belt from the engine or water wheel shaft—but there are a great many other places where they are very serviceable, although not so necessary as in the case of the main driving belt. This is especially true with fast running belts over small pulleys, or where one of the pulleys is small.

Dynamos should always be run with spliced belts, as it is absolutely necessary that the belt should run true, and that there should be the least possible danger of a break occurring where it is joined. A dynamo, being movable on its bed, gives an excellent chance to take up the slack in the belt.

In many places a belt is overstrained. The pulleys may have been designed in the first place for a much smaller load, and more machinery having been added without changing the pulleys, the belt gives trouble from slipping. In such a case, where the pulleys are not of too small diameter, the power which the belt will transmit may be increased by putting on a thicker belt, or even by putting a second belt on top of the first. Where this cannot be conveniently done, and even in some cases where a thicker belt is put on, an idler is necessary, and if this is used the belt should always be spliced rather than hooked.

Another place where a spliced belt with an idler may often be used to very good advantage is in the driving of fan pumps, where there is hard work to be done, and where the pulleys which come with the pumps are frequently too narrow for high lifts. Then, too, the shutting down of a fan pump even for a short time usually means the shutting down of considerable other machinery, and oftentimes a delay of the entire mill. If such belts are hooked and they give trouble with slipping it is only a few minutes' work, I know, to cut them off and take them up; but a shut down of twenty minutes or half an hour means the loss of a good many dollars in a mill which is running to its full capacity, and it is of the utmost importance to avoid it when possible.

The idler for a fan pump belt should be placed about one-third of the distance from the driving pulley to the pump. It should be heavy, but arranged so that its weight need not come on the belt. There should be play enough allowed for it on the screw so that if necessary it can be drawn down until the two strands of the belt nearly touch each other. The idler should be so substantially made that it will not rattle, and unless the belt slips or gives signs of slipping it should never be touched.

Where the belts in a mill have to run twenty-four hours a day for six days in a week there are many places where spliced belts may be used to good advantage. I have in mind a particular case where there was a row of machines driven by 4 inch belts, part of them open and part crossed. Each belt drove from a large pulley onto a small one—from a 36 inch, I think, onto a 6 inch diameter—with the small pulley overhead. There was so much water around that it was practically impossible to protect them entirely from getting wet. Lacing is of course out of the question in a wet place, and belt hooks were tried; the belts, however, ran so fast and the difference in the size of the driving and driven pulleys was so great that the belts ran very unevenly, and if any water got on them they would run to one side of the pulley, catch on the iron frame of the machine and be torn off. Finally the belts were joined with a step splice, and then they ran smoothly and gave very little trouble. The difference was very noticeable when the belts became slack; while they were hooked the extra weight of the hooks would cause them to run in waves as soon as they became slack; but with the step splice they ran as smoothly after they became slack as they did when tight. These machines all ran twenty-four hours per day from Monday morning to Sunday morning. During this time of course since no idlers could be used on them, some of the belts would slip and have to be taken up. It was impossible to shut down the power to splice a belt on the pulleys, and it is hardly safe to put a lap splice in a belt which has been merely measured with a tape line. In order to provide for this a frame was made consisting of two timbers placed about 18 inches apart and somewhat longer than the distance between the centres of the pulleys on which the belts were running. At one end of this frame a pulley of a size which happened to be in stock was fixed in place; at the other end a second pulley was placed, but so arranged that it could be moved toward the first pulley. To do this we put it on a shaft and built it into a small auxiliary frame which could be slid upon the long timbers.

The length of the open belts was then accurately measured with a steel tape when the machinery was idle, and the tape was put around the two pulleys on the frame, the adjustable pulley being moved until the tape was taut. A mark was then made on the longitudinal timbers opposite the centre of the shaft, so that this exact length could be obtained at any time without remeasuring. The length of the cross belts was also found; the tape was put around the pulleys on the frame and another mark was made on the longitudinal timbers. From this a belt of the length of either the open or crossed belts could be cut at any time without taking the measure. The frame could also be used for any other belts when needed. If one of the belts became slack and gave signs of slipping, a new belt was put around the pulleys on this frame and cut the exact length of the old one, both ends being prepared at the same time for a step splice. This belt was then put around the two shafts while they were in motion, and the ends were joined with cement and riveted, the slack belt was run off the pulleys and the new belt run on. The old belt, if in good condition, could be then fixed over, so as to be used in some other place.

Chuck for Paper Box Covering Machines.

The improved chuck for paper box covering machines herewith illustrated is intended to provide a chuck which can be readily adjusted for boxes of various sizes, and the several parts of which can be readily locked in place after having been so adjusted.

The invention consists in the combination of a central body having a central tube and provided with crossing grooves, crosspieces at both ends and sides of the body, bars projecting from the crosspieces through grooves in the body, loose sleeves on the tube provided with means for engaging the bars for permitting the two end pieces to be moved toward or from the ends of the box simultaneously and for permitting the side pieces to be moved toward or from the side of the body, and means for clamping said sleeves together.

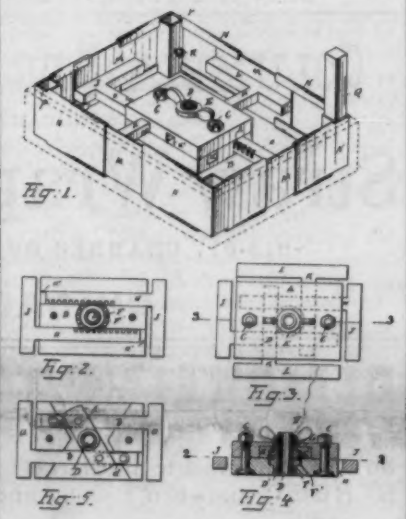
It further consists in the combination with these parts, of plates secured to the crosspieces and angle or corner pieces mounted to slide on the plates.

Figure 1 is a perspective view of the chuck; Fig. 2 is a horizontal sectional view on a reduced scale on line 2, 2, of Fig. 4; Fig. 3 is a plan view; Fig. 4 is a longitudinal sectional view on line 3—3 of Fig. 3, parts being omitted; Fig. 5 is a horizontal sectional view of the modified construction.

Two blocks, A and B, are placed one above the other and are connected by screw bolts, C, passing through them, and provided with suitable nuts.

A tube, D, is passed through the two blocks, the upper end of the tube projecting beyond the upper surface of the upper block, and having its projecting end screw threaded externally, and on this threaded end the winged nut E is screwed.

Two sleeves, F and G, surround the tube D loosely, the lower sleeve F resting on the bottom external flange D′ of the tube D, which flange D′ is countersunk in the under side of the lower block B, the sleeve F extending to the upper surface of the lower block. The sleeve G rests with its lower edge on the upper edge of the sleeve F, and extends to the upper surface of the upper block A, so that the winged nut E, when screwed down, bears on the upper end of the upper sleeve G. On the sleeves F and G the pinions F′ and G′ respectively are formed.



Chuck for Paper Box Covering Machines.

The pinion F′ engages two racks, H, mounted to slide in grooves, H′, in the upper surface of the lower block, which racks are provided at their outer ends with crosspieces, J, which crosspieces are at the two ends of the blocks.

The pinion G′ engages two racks, K, arranged to slide in grooves K′, formed in the under side of the upper block A, and the racks K are provided at their outer ends with crosspieces, L, at the two sides of the blocks.

The grooves H′ are arranged at right angles with the grooves K′. Metal plates, M, are secured to the outer faces of the crosspieces J and L, and on the same the angle or corner plates N are mounted to slide, which angle plates have their upper and lower edges bent inward and over the edges of the plates M, so as to permit of shifting the angle or corner plates toward or from each other on the plates M, according to the size of the box.

Pockets, P, are formed on the inner sides of the angle or corner plates N at the corners, and serve to receive extension rods, Q, which can be locked in place by means of screws, R. These extension rods Q are used in case the height of the box is greater than the height of the plates M and N.

In the modification shown in Fig. 5 the crosspieces *a* are formed on the ends of bars, *b*, which are connected by links, *d*, with a crosspiece, *f*, mounted to turn on the central tube D, and other crosspieces for the two sides are arranged in substantially the same manner, so that when a crosspiece at one end of the block is pushed in or out the opposite crosspiece will be moved correspondingly, and the crosspieces at the side can be moved in like manner.

The chuck is adjusted and used in the following manner: The winged nut E is loosened and the crosspieces at the sides and ends are pulled out until a frame is formed by the plates M and angle or corner pieces N of sufficient size to fill the box, and then the parts are locked in position by screwing down the winged nut E. The extension rods Q are inserted in case of boxes having greater height than the plates M. The chuck, having been adjusted to the proper size, is mounted on a spindle or pin, so as to turn with the same, which pin or spindle is rotated by means of any suitable mechanism. The box to be covered is then placed on the chuck, one end of the strip of paper covered with paste or gum is applied on one side of the box, and as the box with the chuck continues to rotate the strip is successively applied on the four sides, the box is removed, another one placed on the chuck, and so on.

The chuck can readily be adjusted in size for boxes which are narrow and long, or square, and to various sizes in the different directions, all that is necessary being to loosen the winged nut E and then push in or out the sides or ends, and then lock the parts in place.

Beaters and Beating.

Second Paper.

[WRITTEN FOR THE PAPER TRADE JOURNAL.]

By James Hall.

Thick paper, such as lithograph, music, drawing, &c., need to have the stuff well and uniformly beaten in the engine in order to secure a certain freedom in the flow, or the fibres would never get properly closed up nor the water be effectively drawn out. This is all the more essential where a fine screen is used for the purpose of getting a clean sheet. If this is not done the machine tender is under the necessity of constantly rubbing the face of the screens, the result being that a great amount of dirt and rubbish of all kinds is pushed through, and quite a lot of paper is spoiled in consequence.

In making thin papers the stuff needs to be carefully beaten—the fibres drawn, not cut or crushed. It is usually thought to be necessary in order to make a thin sheet to leave the fibres of good length. If this is done the machine tender is sure to meet with the same difficulty in respect to passing the stuff through the screens. The stock will not go through without help, thick and thin sheets will follow, besides the usual amount of spoilage from dirt, &c., when screens are meddled with; but where the fibres are carefully drawn, so as to pass the screens, a strong and uniform paper will be secured.

Where this care is not exercised, but the stuff is let down with the fibres long, there will not only be the difficulty with the screens, but the paper itself will show a good deal of light and shade. The long fibres will not close up, but will leave weak places in the sheet, making it tender when torn longthways of the machine. In passing over the wire the stuff will also lose a good deal of its loading. On the other hand, if the stock is very uniformly beaten and the fibres are so reduced as to pass the screens without help, with a good shake on the wire these weak places will not appear, the fibres closing up all interstices, and a strong and compact sheet will result, besides carrying a greater percentage of the loading which has been put into it.

In working up broken it will be found advantageous to have it pulped down in a separate engine into which steam should be introduced and the papers well rubbed out. After lying in a drainer until semi-dry the pulp will be all the better for being passed under a "Kollergang," or edgerunner, until thoroughly well milled; it should then be used to thicken up the beaters about an hour before they are let down to the Jordan or Marshall engine. Stuff so prepared will not only make a firmer and smarter looking sheet, but will carry a much larger proportion of the loading. Anyone doubting this has only need to try it to be convinced of ts accuracy.

In making thin papers a great advantage will be secured to the beaterman if, while being washed, the stock is drawn out a little in the breakers; but in doing this care should be taken not to cut or crush the fibres, but simply to reduce them to a medium consistency in respect to length. Three or four hours may sometimes be very usefully employed in doing this; and stock so treated will be better to manipulate when it comes to the beating engine where the roll can then be managed with the skill of an expert.

To secure uniformity in the substance of the sheet, the machine chest should be kept well up in stuff, and on no account should the beaters be emptied into the chest from which the machine tender is then working. In mills where the preparation is inadequate to the output of the machines, this precaution cannot always be taken; but as the lesser of two evils it is better to shut down the machine and "wait for stuff" than to go on working from the bottom of a chest.

Next in order of importance comes the filling of the roll, for no matter what may be the size of the engine, the placing of the bars in the roll is certainly one of the greatest moment. In most mills, no matter what the make may be, the roll is generally filled with the fly bars or knives set equidistant from each other. A roll so filled may do very well for washing and bleaching stock, where the work expected from it is simply that of paddling the stuff along, but for beating purposes a roll so filled is in my judgment altogether inadequate. Looking at the thing from a common sense point of view, it must be obvious: (1) that not more than three of these bars at most can be expected to touch the bed plate at all; and (2) that this being so, the engine must travel a very long time before the bulk of the fibre gets even a brush; and (3) that it is not impossible for some of the fibres to escape altogether through the spaces between the bars, and not get a touch even. Beating like this is, to say the least, not effective, and renders a refining engine a matter of absolute necessity.

A more practical way of filling the roll is to put the bars in bunches of three, with about 2 inches of space between the bunches, the bars being about three-eighths of an inch thick and divided by hardwood or zinc dividers, to cover, say, 2 inches of space, and then about 2 inches between then and the next bunch, so as to give the roll a chance to draw the stuff along, the bars to have about three-quarters of an inch bevel, and when new to be about one-sixteenth of an inch at the point. The bed plate, with an appropriate sweep, will admit of being about 7 inches on face, and should be filled with not less than about twenty-eight knives of, say, one-quarter inch thick, with a suitable bevel, the point being about one-sixteenth in thickness. With tackle like this ordinary book and writing papers should be beaten off in five hours in an engine carrying 400 pounds and travelling at 180 or 190 per minute.

Of course some care has to be exercised in the management of the roll with sharp tackle of this kind, but it is here where the science comes in. The roll must not be put down sharp at first, but for an hour or two simply allowed to brush the stock, and then applied discreetly during the remainder of the time that the stock is in the engine. The fibres will thus be drawn in such a way as to give strength and tenacity to the paper when made.

A common theory in paper making is that in order to get a good strong sheet, one which will tear well, &c., you must let down the stuff with fibres long. This may be quite true in the case of thin papers, but in papers of a fair substance it is a mistake. The strength of the sheet, as well as a smarter looking sheet, will be better obtained by having the stuff very evenly beaten and not too long, so as to secure a certain freedom in the flow, inasmuch as the paper, if the shake is right, will be more closely felted on the wire and all of the interstices, which cause the weak-

EXCELLENT MILL WRAPPERS FOR BOOK AND NEWS,

1 3-4 CENTS PER LB.

Samples furnished on application. Correspondence Solicited.

A. STORRS & BEMENT CO.,

85 and 87 Franklin Street, Boston, Mass.

LARGEST MANUFACTURERS OF

COVER PAPERS

IN THE WORLD!

☞ Send for New Sample Book and note additions to line.

CROCKER MANUFACTURING CO., HOLYOKE, MASS.

NONOTUCK PAPER COMPANY,

HOLYOKE, MASS.

TWO MILLS—TWENTY-FIVE TONS DAILY.

FLAT AND RULED WRITINGS, ENVELOPE PAPERS, ENAMELED BOOK, COATED LABEL, SUPERCALENDERED AND MACHINE FINISHED BOOK.

PIEDMONT PULP AND PAPER CO.
WEST VIRGINIA PULP CO.
WEST VIRGINIA PAPER CO.

MILLS AT PIEDMONT AND DAVIS, WEST VIRGINIA.

MANUFACTURE PER DAY:

20 Tons Best Quality Bleached Sulphite Pulp.
25 Tons High Grade Unbleached Sulphite Pulp.
20 Tons Extra Machine Finished and Supercalendered Book and Lithograph, Engine Sized Flats and Envelope Papers. Express and Manilla Papers.

OFFICE: MUTUAL RESERVE BUILDING, Broadway and Duane St., New York.

THE OAKLAND PAPER CO.,

Manchester, Conn.

MANUFACTURERS OF

No. 1 Engine Sized, ALL RAG White and Colored, Flat and Envelope

PAPERS.

ALL RAG DUPLEX ENVELOPE A SPECIALTY.

Send for Sample Book. N. T. PULSIFER, Treasurer.

WHITMORE MANUFACTURING CO., HOLYOKE, MASS.

—MANUFACTURERS OF—

COATED LITHOGRAPH AND CHROMO PLATE

PAPERS AND CARD BOARD.

WHITE, TINTS AND COLORS.

PASTED WEDDING BRISTOL A SPECIALTY.

POLAND PAPER COMPANY,

MANUFACTURERS OF

BOOK PAPER,

Mechanic Falls and Gilbertville, Maine.

Eagle, Star, Diamond, Poland, Union, Androscoggin and Canton Mills.

C. R. MILLIKEN, Treasurer.

NEW YORK OFFICE, TIMES BUILDING, ROOM 131.

LOOK.

If you are in the market for **BRISTOL** and **CARD BOARD** correspond with the largest manufacturers and dealers in the United States.

LARGE SPECIAL LOTS ALWAYS ON HAND.

LINTON BROS. & CO.,

JAMES LINTON.
BENJAMIN M. JACKSON.

PAWTUCKET, R. I.

OSBORN & WILSON.

WHOLESALE DEALERS IN

HARDWARE, BOOK, NEWS, AND MANILLA PAPERS,

No. 87 WARREN STREET, NEW YORK.

A. G. ELLIOT & CO.,

30, 32 & 34 South Sixth Street, Philadelphia.

BEING AGENTS FOR ALL THE LEADING MANUFACTURERS, OUR STOCK IS UNEXCELLED AND FACILITIES ARE AMPLE TO EXECUTE ORDERS PROMPTLY.

ALBION PAPER COMPANY,

Holyoke, Mass.,

Manufacturers of Machine and Super-Calendered

BOOK PAPER,

—ALSO—

ENGINE-SIZED FLAT PAPER.

EDWARD C. TAFT, Treasurer.

Chelsea Paper Mfg. Co., MANUFACTURERS OF

Coated, S. S. and C., Machine Finish.
Coated Label and Lithograph Papers.
Loft Dried and Engine Sized Flat Writings and Envelope.

Superfine Book Papers.

OFFICE: 140 NASSAU ST., NEW YORK CITY.

MILLS AT NORWICH, CONN. CAPACITY THIRTY TONS DAILY.

COLUMBIA STRAW PAPER CO.,

MANUFACTURERS OF

Straw Wrapping Paper

913-917 CHAMBER OF COMMERCE BUILDING,

CHICAGO, ILL.

REMOVAL NOTICE.

After more than a quarter of a century on DUANE STREET we have removed to the large store 419 & 421 BROOME STREET, between Crosby and Elm Streets, New York.

WILKINSON BROS. & CO.

PAPER TWINES

W. J. THOMPSON & CO.,

Book, News and Manillas,

34 HIGH STREET, Cor. Federal, BOSTON.

MILLS HAVING SPECIALTIES IN THESE LINES, WRITE US.

FREDERICK BERTUCH & CO.,

Rooms 308, 309 & 310 Temple Court Building, New York,

—AGENTS FOR—

CHR. CHRISTOPHERSEN,

CHRISTIANIA.

Chemical and Mechanical Wood Pulp.

BRANCHES:

CHR. CHRISTOPHERSEN & CO., - London. | LAMMLETH & CO., - - Paris.
CHR. CHRISTOPHERSEN'S FILIAL, Göteborg. | GEO. v. d. BUSCHE, - - Hamburg.

SISAL TWINE FOR PAPER MAKERS

MY SPECIALTY.

Write for Samples and Prices to ***JAMES CATING,*** *Manufacturer,*

MASPETH, LONG ISLAND, N. Y.

Stone & Forsyth, 268 DEVONSHIRE ST. - BOSTON. -

AGENTS FOR

P. AND B. WATERPROOF PAPER!

FOR WRAPPING and LINING.

Particularly Desirable for Paper Mills,

For Lining Cases, absolute protection from dampness guaranteed.

ODERLESS!—CLEAN!—EFFECTUAL—CHEAP! Send for Samples and Prices.

JAMES M. FITZGERALD,

Paper and Paper Makers' Supplies.

ENGINE SIZED FLATS AND MACHINE FINISHED BOOK A SPECIALTY.

Dealer in

Book, News, Colored and Manilla Papers.

A large line of Paper and Paper Stock always on hand.

OFFICE AND PAPER WAREHOUSE:

135 & 137 South Fifth Avenue.

PACKING HOUSE FOR PAPER STOCK:

75 & 77 King Street, - New York City.

E. G. LOCKE,

MANUFACTURER OF

Fine Surface Coated Glazed and Fancy Papers,

FOR THE USE OF

Paper Box Manufacturers, Lithographers, Label Printers, Publishers, Bookbinders, &c.

Factory and Office: Nos. 33 & 35 Cooper St., CAMDEN, N. J.

Telephone: "No. 236 Camden."

GEO. H. TAYLOR. JAS. T. MIX.

GEO. H. TAYLOR & CO.

Paper Dealers,

207 and 209 MONROE ST., CHICAGO,

—IN—

EXTRA SUPERCALENDERED,

No. 2 SUPERCALENDERED

ALL GRADES AND COLORS.

Print, Manilla, Colored, News,

COVER PAPERS, PLATE AND CHROMO.

We have excellent facilities for disposing of job lots of all grades that can be purchased at low prices. Samples of same and regular line are solicited.

A SPECIALTY OF LARGE CONTRACTS FOR ROLL PAPER.

Nashua Card and Glazed Paper Co.,

NASHUA, N. H.,

MANUFACTURERS OF

Cardboard and Surface Coated Papers, Fine Wedding Bristols, Calendar Boards, Fan Boards, Playing Card Stock, Mat Boards, Coated Lithograph Boards, Flint and Friction Glazed Papers, Enameled Book and Cover Papers, Embossed Box and Cover Papers. . . . . .

SEND FOR CATALOGUE.

NIAGARA GLAZED PAPER COMPANY,

NIAGARA FALLS, N.Y.

MANUFACTURERS OF

FRICTION GLAZED PAPERS,

RAILROAD AND TAG BOARDS,

LITHOGRAPH AND VARNISH LABEL PAPERS,

COATED BOX MANILLA AND STRAW BOARDS.

SAMPLES CHEERFULLY SUBMITTED.

THE GLEN MILLS PAPER CO.,

MANUFACTURERS OF AND DEALERS IN

Parchment Papers,

WILLCOX WATERLEAF,

Music Papers and Rag Specialties,

518 and 520 Minor Street,

PHILADELPHIA, PA.

MILLS: GLEN MILLS, DELAWARE CO., PA.

ness in the tearing capacity, filled in by the smaller fibres and whatever starch or other ingredients there may be in the stock, thus giving a strong and well formed sheet and one which will finish well at the calenders.

It will be found better, however, in practice not to have a newly filled roll and plate put in at the same time; but let one be put in when the other is about half worn down. This prevents any tendency to rawness, and moreover gives a limp and mellow feel to the stuff, and materially assists in the calendering of the paper.

In making thin papers duller tackle and a longer time in the engine are necessary; but in the majority of cases in book and writing papers of fair substances the theory above propounded will produce the best results, and time as well as money will be saved in driving.

Correspondence.

CHICAGO.

[FROM OUR REGULAR CORRESPONDENT.]

WESTERN OFFICE PAPER TRADE JOURNAL, 56 and 58 La Salle Street, CHICAGO, August 8, 1894.

Since the middle of last week Chicagoans have been able to realize that they are really upon their native heath. For several days preceding that time—and indeed for quite a long time preceding, with the exception of a cool day's intermission now and then—the weather had been intolerably hot—after a style which does not belong here at all—and it was becoming an easy matter to sympathize with dwellers in cities less fortunately situated. Thursday was very pleasant, but not since the weather bureau was established in Chicago has the month of August produced such a low temperature as that of Friday. The mercury found its lowest level during the day at 48°—1° lower than ever in the same month. August 24, 1887, and August 28, 1891, are the days when the thermometer marked 49°.

Of course we must expect more warm days before the summer ends, but we all feel that the back of the "hot spell" is broken, and that we can safely resume the well-known "hustling" ways which have had so much to do with the progress of the city.

Of the present state of business not much is to be said. It goes without saying that things are quiet; not so bad as they might be, all things considered, but far from booming. A very few men prominent in the paper trade, whom I have recently talked with, say that they see no improvement whatever, but these are largely outnumbered by those who speak more encouragingly. Said one: "There has been some improvement in the condition of things during the past week or ten days and considerable since the middle of July. I notice it more in the country, however, than in town, especially in agricultural sections. Manufacturing centres are yet very quiet. The fact, though, that manufacturers generally have for a long time been making up nothing for stock—filling orders only—and will thus have nothing in the way when the time comes, ought to insure an excellent business when once the turn is reached."

Another said: "The month opened right well, but we can't figure much on the outcome till after the 10th; orders are always numerous in the first few days of any month. July, although bad enough, turned out better than I supposed it would."

Another gentlemen says: "Business is picking up a little."

Another: "Getting better, but still room for improvement."

Another says: "Trade is undoubtedly better than it was a month ago, but not good enough to make one feel jubilant."

Several more might be quoted to the same effect, and all are representative men.

Scripture saith: "Iron sharpeneth iron: so a man sharpeneth the countenance of his friend." Making a local application of this proverb it may safely be said that the brave and buoyant spirit of the average Chicago business man—and of none can this be more justly predicative than of the average paper trade man—together with the keen competition among them all, acting and reacting upon one another, will in due time bring things back to their normal shape.

The trade generally gives THE PAPER TRADE JOURNAL great credit for its able and exhaustive report of the proceedings of the Saratoga Convention of the American Paper Manufacturers' Association. One big man, however, in commenting upon the association itself, says: "It does no good. The burden of its members' song when they get together is, 'What shall we do to be saved?' and 'How in the d—l can we get sinners in here?' and all this to but little purpose. The trade at large take but slight interest in its comings and goings."

The gentleman quoted is very prominent, but of course he spoke only for himself.

Talks with strawboard men, both with those interested in the American Strawboard Company and those representing the outside mills, reveal nothing later than the conclusions—or rather lack of conclusions—reached at the recent meeting at Niagara Falls.

Both sides are "as they were," and each seems to be playing a waiting game.

George E. Nye, a manufacturer of steam pumps at Canal and Washington streets, was closed by the sheriff last week on executions issued on judgments by confession entered in the Circuit Court. The judgments were two in number, one being in favor of Simon F. Stein and the other in favor of Frank F. Nye. Mr. Nye has been in business in Chicago for a number of years and is well known among machinery manufacturers.

J. C. Armstrong, manager of sales for the various mills of Wm. M. & J. S. Van Nortwick, with headquarters in Chicago, has gone, accompanied by a party of friends, on a three weeks' hunting and fishing trip to the famous Nepigon country, over in Canada. The route from this point is by steamer up (or more probably down) Lake Michigan to the Straits of Mackinaw, through the straits to Lake Huron, across Huron to the Soo, through the Soo to Lake Superior, and then to Port Arthur on the northern shore of this famous "Gitchee Gumee." From Port Arthur the party will take a tug boat to the mouth of the Nepigon River, where they will be met by Indian guides with an ample supply of canoes—possibly of the same sort of birch bark as was used by Hiawatha and his friends on these same waters so many years ago. The Nepigon is said to be the finest trout stream on the American Continent, and its banks abound in cariboo and many other varieties of the deer tribe, in bears, both brown and black, gray wolves—in short, in all of the large game that the most ardent sportsman could long for. Mr. Armstrong and his friends are supplied with an abundant camp outfit, and with rifles, shotguns and fishing tackle galore. In their progress up the Nepigon they will doubtless spread havoc among the furred and finny denizens of wild wood and water, respectively, and when their outing is ended will return to civilization the proud owners of many a trophy.

J. W. Butler, president of the J. W. Butler Paper Company, has just had a letter from his son, Frank O., vice-president of the company, whose departure for Europe was noted in this correspondence early in May, announcing his return to London, after spending many weeks on the Continent. Mr. Butler writes his father that he is glad to get back to a country which is so far like his own that he can talk to those around him instead of being compelled to communicate his ideas by signs only. He is accompanied by his wife and his mother, and says that they have all enjoyed the trip immensely from the beginning. They will sail for home on the 15th inst.

Geo. H. Taylor's family is spending the summer with relatives in Manchester, Vt. Mr. Taylor will join them there about the middle of the month.

James T. Mix, Mr. Taylor's partner, has returned from his trip to Lake Superior, looking in every way the "new man" it was predicted he would be.

T. F. Rice, vice-president of Bradner Smith & Co., has gone East on a three weeks' vacation. Mr. Rice's plans are first to visit his friend, E. C. Rogers, of the Massasoit Paper Manufacturing Company at Holyoke, and from there the two gentlemen, accompanied by their respective families, are to take in various points on the seashore.

W. C. Gillett, treasurer of the Chicago Paper Company, recently got back from an outing, which he, with his family, enjoyed to the full, upon and around Lake Winnebago. They were the guests of Hon. A. W. Patten, of the Patten Paper Company, whose cordial hospitality is well known. What with horse races, yachts races and the many other amusements which that delightful region affords, the time allotted for the trip—not quite two weeks—seemed all too short.

A. T. Hodge, vice-president of the "Chicago," who will leave for the White Mountains about the 15th inst., says that W. C. G., above mentioned, is only waiting for his (Hodge's) absence to "raise Cain" to his heart's content, and so make up for the time which he thinks he lost by coming home so soon.

J. C. Brocklebank says that the Paper Manufacturers' Association had a most enthusiastic meeting at Saratoga. Colonel Paine, he thinks, is exactly the man for president, and with the assistance of the efficient secretary, Mr. Sherman, is sure to do some great work for the trade during the coming year.

Mr. and Mrs. Brocklebank found their entire tour, of which the convention and its grand banquet were features, thoroughly enjoyable. After the proceedings at Saratoga they went for a while to Manhattan Beach and thence to Pike County, Pa., where they had a delightful time bass fishing in mountain lakes.

Mr. Brocklebank came back to business on Monday morning. During his absence a fire in the Manufacturers Paper Company's warehouse at Detroit had destroyed the company's entire stock of paper in that city; but upon telegraphic orders being received at the office here, five carloads had been immediately forwarded and temporary wants supplied.

E. A. D. Reynolds, who has recently been promoted to the position of general manager of the Fox River Paper Company, at Appleton, Wis., was in Chicago last week. Mr. Reynolds bears his new honors meekly, and says that he works just as hard as he ever did.

Other visiting members of the trade lately in town were: C. W. Phelps, of the ParsonsPaper Company, and Maj. H. D. Bowker, of the Holyoke Envelope Company, both of Holyoke, Mass.; J. M. Johnston, of the Jacoby Paper Company, and Mr. Wrenn, of Sutphin & Wrenn, both of Middletown, Ohio; Wm. M. Gilbert, president of the Gilbert Paper Company, and Geo. A. Whiting, both of Menasha, Wis.; W. Z. Stuart, of the Kimberly & Clark Company, Neenah, Wis., and John Gittens, of the Shattuck & Babcock Company, De Pere, Wis.

Dr. R. T. Higgins, general manager of the Columbia Straw Paper Company, commenting upon an item relating to the company's mill at Vandalia, Ill., published in last week's PAPER TRADE JOURNAL, says that said item gives undue importance to what was really quite a trivial affair.

Vandalia is the doctor's home. He is president of the Farmers and Merchants' Bank there and was also president of the Vandalia mill before it was merged into the "Columbia." Speaking as one familiar with all of the facts and circumstances, he says that there has been a slight hitch among some of the farmers of that vicinity over the matter of supplying straw, but that no serious difficulty has ever occurred; that the delivery of straw by individual farmers being very unsatisfactory—loads coming in only at odd times and so irregularly that the company never knew what to depend upon—a contract was finally made with a certain farmer some time ago to supply the mill with straw in large quantities, a condition of said contract being that the straw should be delivered within certain specified limits of time—an arrangement made necessary by the disorganized condition of affairs existing before the contract was made. Other farmers, the doctor goes on to say, thinking the contractor had too good a thing, became dissatisfied, being of the opinion that they could do better by selling directly to the mill, as had formerly been the practice, than by selling to him, and that efforts were made by some to bring about a return to the old method; that ascertaining, however, that the mill must be supplied regularly, if at all, and that none among their number could undertake to step into the contractor's place and guarantee such regular supply, they soon began to take a different view of things, and calling to mind the fact that the mill had always paid them a good price for an article which had previously been allowed to go to waste, and finding upon due inquiry that the contractor was now paying them as much as the mill itself could afford to pay, they became satisfied with present conditions. The contractor was somewhat uneasy for a while, Dr. Higgins says, lest those of whom he was buying should "go back on" him and so prevent his carrying out his contract; but that, according to latest accounts from the Vandalia mill, many of the farmers are delivering straw freely upon this man's contract and that no trouble whatever is anticipated.

The farmers themselves are said to be rather ashamed of their hasty action, realizing that now, when everything is so depressed, is no time to make a fight upon those who have proven themselves to be among their best friends. R. B. D.

MIAMI VALLEY.

[FROM OUR REGULAR CORRESPONDENT.]

DAYTON, Ohio, August 9, 1894.

Business in this section of the State is jogging along at the same old rate. It is twice as encouraging, however, as at any time since the depression. There appears to be a moderate demand for book and

THE GLEN MFG. CO., OFFICE: 244 WASHINGTON STREET, BOSTON, THE HAVERHILL PAPER CO.
NEWS PAPER AND WOOD PULP.

CHAS. D. BROWN & CO. 154, 156 & 158 Congress St., BOSTON, MASS.
FOREIGN AND DOMESTIC PULPS AND FIBRES. PAPER MAKERS' CHEMICALS AND MILL SUPPLIES.

W. A. BINGHAM & CO., 186 & 188 FRANKLIN STREET, NEW YORK.
PAPER, PAPER BAGS, FLOUR SACKS, &c.

J. L. & D. S. RIKER, 45 CEDAR STREET, NEW YORK. Importers and Manufacturers' Agents.
SOLE AGENTS FOR THE UNITED STATES AND CANADA ALL TESTS Soda Ash and Alkali.
OF
THE UNITED ALKALI CO., Ltd., of Great Britain, BLEACHING POWDER.
FOR THE SALE OF THEIR VARIOUS BRANDS OF

PERKINS, GOODWIN & CO.,
Nos. 66 and 68 DUANE STREET, NEW YORK,
Have on hand and to arrive all grades of Bleached and Unbleached
SULPHITE AND SODA PULPS. SEND FOR SAMPLES AND PRICES.

writing papers, but news is resting as quietly as Dr. Grim Visitor's patient.

Congressman Harter, of Ohio, who is president of the Western Strawboard Company, of St. Mary's, is, it seems, opposed to surrendering to the Senate in the tariff fight. He answered interrogatories concerning the struggle as promptly as he gave me his opinion on the feasibility and practicability of the proposed Miami and Erie Ship Canal some time ago.

He said: "You ask me what I think about the tariff situation. I do not think we ought to vote for the unaltered Senate bill, and for one I never intend to. As the bill now stands it will, if passed, go down into history not as the Wilson bill or the Senate bill, but as the Havemeyer bill. A little firmness and patience and we will be rewarded by a bill bad enough, but much better than the McKinley bill."

The failure to transfer the sack factory of the Friend & Forgy Paper Company by the assignee to the Perrine Paper Company, of Franklin, has caused considerable of a rupture in that usually placid paper making centre. The factory was purchased at public auction some time ago, but some legal intricacy delayed its transfer. It was understood that the assignee would be compelled to appear in court to give an explanation of his failure in the matter.

A part of the force of the girls employed at the Harding rag house was laid off last week while the establishment was given a general cleaning up.

The Franklin Mills were closed last week.

The disposal of the extensive oyster pail plant of the Baker & Foglesong Company to a well-known Chicago firm, the J. W. Sefton Manufacturing Company, caused a ripple of surprise and excited inquiries in the local and general trade. This firm had been in existence for several years and without doubt was prosperous to a gratifying extreme. It was the only firm in the country using machines for the purpose of manufacturing oyster pails, the capacity being something remarkable with the aid of a few tenders. The force employed was comparatively small, but the work performed more than correspondingly large. These machines were invented by the owners and have proved to be wonders.

Little doubt exists that a handsome consideration was involved in the transfer and disposal of the plant. Conferences were of frequent occurrence, and the figures of John W. Sefton, of Chicago, and his nephew, John L. Sefton, became familiar to the habitués of the Beckel House. The portly form of Mr. Baker moved about in the corridor as frequently, and while it was whispered that some big deal was nearing maturity the same was not completed until last Saturday, as mentioned in these columns. The sale recalls that a few months ago a report was extant that Dayton capitalists were considering the purchase.

As yet the firms are somewhat unsettled. The retiring company may launch into the business again and it may not; a short time will develop this.

Doings of Miami Valley's paper manufacturers are always interesting, it appears. At least members of the trade hereabouts usually do something worthy of note. About three months ago Charles F. Gunckel, the lately deposed Middletown paper king, &c., filed a petition against the Middletown and Cincinnati Railroad Company, in which he is a stockholder, claiming that Mr. Sorg and other officers of the company had created an illegal indebtedness against the road of $241,000, and asking for a receiver in order to have the corporation dissolved and its affairs finally adjusted.

The story goes that while this procedure was pending in the Butler County Court Mr. Sorg and his friends crossed the line into the Warren County Court and secured judgment for the entire $241,000, levying on all properties of the railroad. Mr. Gunckel's attorneys are of the opinion that since the Butler County Court had first secured jurisdiction, the judgment of the Warren County Court will be set aside. However, the manipulation of the work was concededly clever, and from now on a lively little legal war, quite as interesting as the Japan-China skirmish, may be witnessed.

The Butler County courts made several important decisions this week in the matter of the assignment of Charles F. Gunckel (B. R. Milliken, assignee). The decrees substantially are as follows:

First.—That C. F. Gunckel did not assign his household goods and furniture or any horses and buggies or stable equipments to the assignee, but at the date of the assignment the same belonged to Ida A. Gunckel.

Second—That the court further finds and decrees that Mr. Gunckel transferred to his wife for three years, until the property was sold on which he had given mortgages, all of the rents thereof.

Third—That the court finds that Mr. Gunckel has in his possession small notes amounting to $300, which are considered worthless. He is ordered to hand these to the assignee.

Fourth—That the court further orders Mr. Gunckel to turn over to the assignee all of the stock owned by him at the date of the assignment.

In all of the foregoing the assignee is relieved of responsibility or liability. The decisions came partly in the nature of a surprise, although they touch only meagrely on the vast failure of the once mighty manufacturer. Mr. Millikin, the assignee, was in Hamilton the other day and offered the real estate in his hands for sale. There were no public bidders and the matter passed. The sale will now necessarily be readvertised.

The office of the old Friend & Forgy mill at Franklin was renovated this week. Appearances have been materially improved.

Katie Lyons, employed at the Mead Paper Company's mill in this city, met with an accident the other day which resulted in the loss of the index finger of her right hand.

Little George Mead, son of Col. Harry Mead, of the Mead Paper Company, performed a gallant deed at Swampscott, Mass., this week, in rescuing a youngster from death in the sea. While dangerously skirting the water in a favorite lobster haunt the boat capsized, throwing its occupants out. George was able to swim and after an heroic effort towed his exhausted associate ashore, aided only by a frail craft.

J. C. Brown is off on a business trip in the interests of the Franklin Paper Company.

D. B. Anderson has returned to Franklin after a busy trip on the road.

Col. W. P. Orr, of Piqua, is touring the lakes.

The old location of Aull Brothers Paper Company's establishment now presents a deserted appearance. About all of the machinery and factory equipments have been removed temporarily to the double quarters in the four story structure on Second street, between Main and Jefferson streets, lately vacated by a manufacturing concern. The factory is running and filling all orders.

M. V.

BOSTON.

[FROM OUR REGULAR CORRESPONDENT.]

EASTERN OFFICE PAPER TRADE JOURNAL,
67 FEDERAL STREET,
BOSTON, August 9, 1894.

During the past few days I have interviewed the heads of several leading city firms on the subject of business with the view of learning if trade prospects are encouraging, and it is a matter of general report that the outlook is much more favorable than for some time past.

While some firms report a fair amount of business doing from day to day, other jobbers are more enthusiastic.

These reports, varying as they do, are the reflections of the different lines of trade, printing papers not being as active as manillas and wrappings.

Mills under contract are not experiencing serious times, although profits are somewhat reduced when renewals are made.

Importers of paper stock say that inquiries for supplies are coming in quite numerously, but, as paper makers are not inclined to meet the views of importers, the business actually booked is not large. Yet the outlook is more favorable than for some time past, owing to the inquiries for mill supplies, and because of the fact that production has been curtailed, while the demand for paper shows some little improvement over that of recent weeks.

F. W. Spicer, general manager of the Frontenac Paper Company, Dexter, N. Y., was in Boston this week. Mr. Spicer is on a summer vacation tour, accompanied by his wife, and during the past month they have visited several of the prominent seaside resorts of New England and Canada, and they will continue to rusticate for some weeks to come. While away from Dexter Mr. Spicer is fully conversant with all going on at the mill, which he said was running full time and producing up to its full capacity. He stated that during the year so far the mill was closed down only once and for a period of ten days.

H. H. Colony, representing Chas. D. Brown & Co. in Keene, N. H., was in town the past week.

H. Estes Wright, representing Pulsifer, Jordan & Co. in the West and South, has been summering at Block Island for some days, but will leave town to-night for the Western territory.

Other recent trade visitors were Daniel F. Emery, of Portland, Me.; J. W. Flint, of Bellows Falls, Vt.; C. W. Wheelwright, of Providence, R. I.; Henry Hurlbut, of South Lee, Mass.; Chas. Mayo, of Lawrence, Mass.; Ed. Bill, of Springfield, Mass.; Mr. Sturtevant and Moses Newton, of Holyoke, Mass.; H. M. Phelan, of Huntington, Mass.; Chas. Barton, of Worcester, Mass.; Oscar Hartwell, of Nashua, N. H.; Sanford Hanner, of Chatham Centre, N. Y.; George Briggs and C. W. Cook, of New York.

At 3 o'clock, August 18, the assignees of Harrison Loring's City Point Works at South Boston will offer the property for sale at public auction. The sale will be made and title given to the property subject to the right of dower, taxes, &c.

The Richards Paper Company, of South Gardiner, Me., is putting in the Grinnell automatic sprinkler system as reported by the Boston office of the General Fire Extinguisher Company.

Thomas H. Casey, with Edward H. Haskell, will leave town this week for a two weeks' stay at Saratoga Springs, N. Y., where his family is located for the summer.

The Star Brass Manufacturing Company, No. 33 Lancaster street, this city, has just issued a very neat publication which should be in the hands of every steam user. While this work is a catalogue of the firm's numerous steam appliances, it contains some forty pages of useful information for engineers and steam users. It contains nearly 200 pages and is of convenient size for the pocket, every article made by the company being fully described and illustrated. This is the company which manufactures the Lowden patent automatic steam pressure regulator for drying paper and for controlling the pressure on bleach boilers and digesters, and the Lowden automatic boiler feed regulator, a safeguard against explosions—two devices largely used in paper mills.

In presenting this publication to the trade the Star Brass Manufacturing Company addresses its patrons as follows: "In publishing our annual catalogue we have selected this size—pocket edition—as being most convenient for general circulation and reference. Aside from its being a catalogue and price list of steam gauges, pop safety valves and other steam specialties, we have devoted several pages to useful information on physical and mechanical elements, constructions and results. The value of such a publication as a reference book for engineers and steam users will be readily appreciated, and serve as an excellent compendium for everyday use.

As every paper mill is interested in the steam appliances made by this company a copy of this catalogue might be of value, and if wanted it will be mailed without cost upon application to the Star Brass Manufacturing Company.

Charles D. Brown is in Portland, Me., this week.

Hot days continue, although the last of the summer months is with us. With cooler weather and an end of the tariff squabble, business will no doubt improve.

DELESDERNIER.

HOLYOKE.

[FROM OUR REGULAR CORRESPONDENT.]

HOLYOKE, Mass., August 9, 1894.

Business continues dull this week, without any signs of immediate improvement.

There is nothing in sight to warrant any expectations of a change for the better right away. The uncertainty of tariff action has much to do with this state of affairs, and as long as this condition obtains business will continue dull.

"If Congress would only adjourn and leave the tariff as it now stands, the fall elections would do the rest and business would increase 50 per cent. within three months," said a well-known manufacturer to the writer this morning.

Most of the mills are managing to keep fairly busy on orders received from day to day, but there are very few concerns in this city which are making any money. Paper is selling so cheaply, and the competition is so brisk, that when a mill does receive a fair showing of orders there is very little money in it. Yet none of the mill owners care to shut down for any length of time.

The mills have been more or less troubled by low water this week, and most of them have been obliged to fall back on the steam plants. It looks as if the water in the river will reach the lowest point recorded for a number of years unless relief comes in the shape of heavy rains. Most of the rain storms this season have given this section the go by.

The Holyoke Water Power Company increased its working force on the site of its new dam this week. Two sets of men are kept constantly employed, one at night and the other during the day. Considerable blasting is done at night, and the heavy explosions can be heard for a long distance from the scene of the work. Many men who have been out of employment for some time have found work and the force will be added to as often as is necessary.

The assessors have finished their work and the tax rate is an even $15 on $1,000, or a decrease of 80 cents from last year's rate. The total valuation is about $26,000,000, an increase of over $1,000,000 above last year's figures. Real estate figures largely in this gain, the increase from this source being $825,000. This is a very gratifying showing, considering the general business depression.

The paper manufacturers and those closely allied to that industry pay a combined tax to the city of $107,260, divided as follows: Albion Paper Company, $4,438; Crocker, $2,183; George C. Gill, $3,656; Holyoke Water Power Company, $25,450; Parsons No. 1, $8,637; Parsons No. 2, $4,598; Valley, $3,103; Beebe & Holbrook, $2,897; Whiting, $8,885; American Pad, $1,150; Connecticut River, $2,454; Franklin, $1,121; Judd, $275; Massasoit, $2,231; National Blank Book, $1,631; Norman, $4,408; Riverside, $5,786; Smith & White, $180; Wauregan, $1,990; Whitmore, $375; Chemical, $4,209; George R. Dickinson, $3,222; Holyoke Envelope, $1,264; Holyoke Paper Company, $4,968; Linden, $5,016; Newton, $1,583.

The Whiting Paper Company's No. 2 mill, which has been undergoing extensive improvements for a number of weeks, will probably start up again next week.

F. D. Smith, of the firm of Smith & White, paper finishers and pad manufacturers, has sold his interest in the establishment to his partners, E. N. White and J. L. Wyckoff.

F. D. Heywood, treasurer of the Whitmore Manufacturing Company, has bought a lot at the corner of Cabot and Linden streets, and will soon build a handsome $10,000 residence for his own use.

Albert Parzineau, a young fellow seventeen years old, an employee of the Holyoke Machine Company, was drowned in the river on Sunday while bathing.

The *Transcript* made its appearance this week as an eight-page newspaper and presented a very creditable appearance. The printers' strike, which is yet in force, does not seem to affect Editor Dwight to any marked degree.

S. S. McElwain, president of the Linden Paper Company, pays a tax of $282 in the town of West Springfield, where his fine stock farm is located.

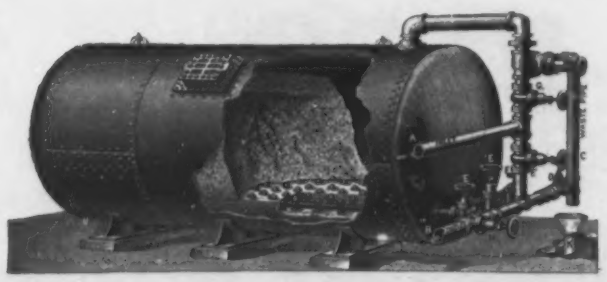
The Collins Paper Company, at North

THE PUSEY & JONES COMPANY,

WILMINGTON, DELAWARE,

Builders of

PAPER MILL MACHINERY.



NEW YORK FILTERS.

Protected by Patents.

Most important being the SECTIONAL WASHING Patent. By the system of Sectional Washing all necessity of devices for stirring bed while washing is entirely obviated, the entire force of the reverse current, when washing, being directed against one-third of the bed at a time.

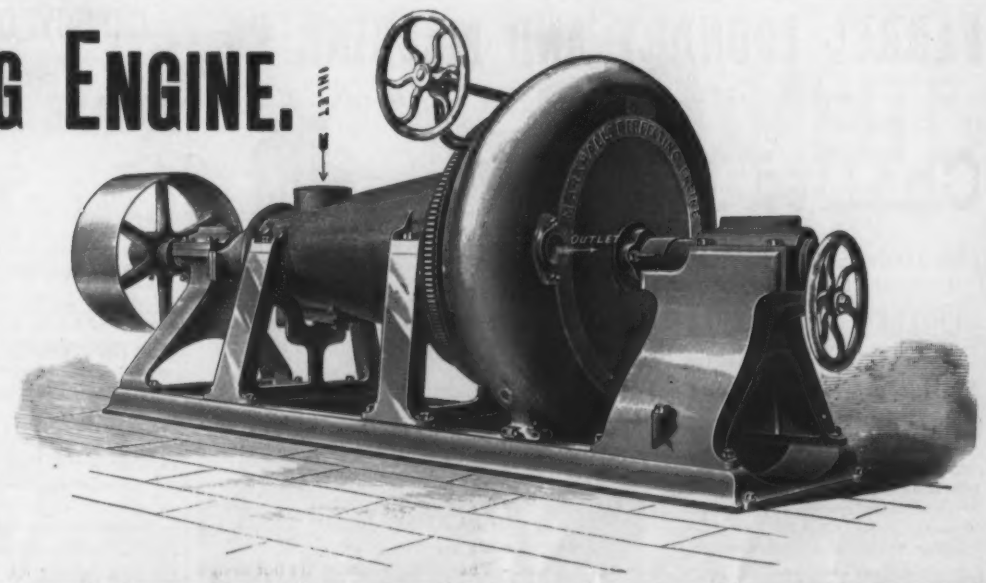
Adapted to Open Gravity, also Pressure Filters. **Send for Estimates for City, Town or Mill Plants.**

NEW YORK FILTER CO., 145 Broadway, New York. CHICAGO BRANCH: 85 Dearborn Street. ST. LOUIS BRANCH: 304 N. Fourth Street.

MARSHALL'S PATENT PERFECTING ENGINE.

SUITABLE FOR ALL CLASSES OF STOCK
AND EVERY QUALITY OF PAPER.

This Engine will produce a **better finished, stronger** and **more even** sheet of paper from the same materials than can be produced by any other mechanical process, and at the same time will greatly **REDUCE** the **TIME** and **POWER** required for Beating.



MARSHALL ENGINE CO., Turner's Falls, Mass.

BENTLEY & JACKSON, Bury, England, Near Manchester. | USED IN THE LEADING MILLS OF THE WORLD. | EVERLING & KAINDLER, 14 Rue de Condé, Paris.

ASHLEY B. TOWER & CO., MILL ENGINEERS and ARCHITECTS,

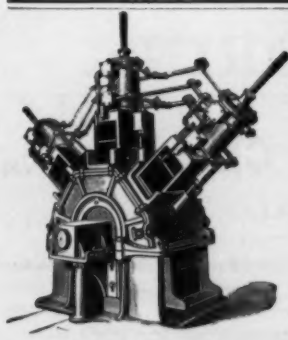
HOLYOKE. MASS.

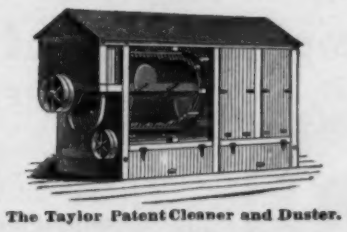
ASHLEY B. TOWER.
GEORGE F. HARDY.

PLANS AND SPECIFICATIONS FOR THE CONSTRUCTION AND EQUIPMENT OF ALL KINDS OF **PAPER AND FIBRE MILLS.** SURVEYS AND PLANS FOR THE DEVELOPMENT OF WATER POWERS. MILL PROPERTIES AND WATER POWERS EVALUATED.

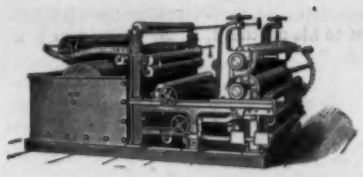
PRELIMINARY ESTIMATES AND CONSULTATION A SPECIALTY.

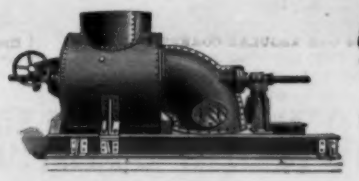
HOLYOKE MACHINE CO., HOLYOKE, MASS.





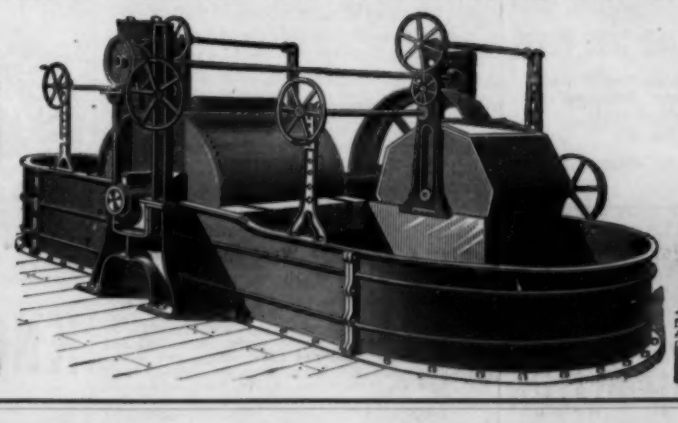
The Taylor Patent Cleaner and Duster.

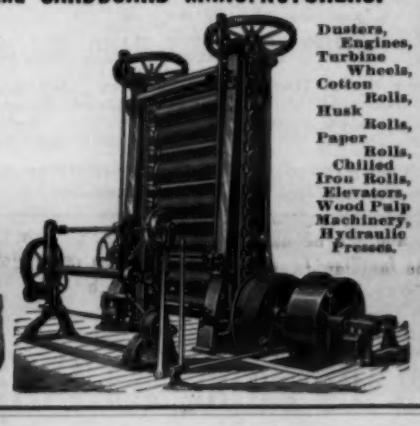




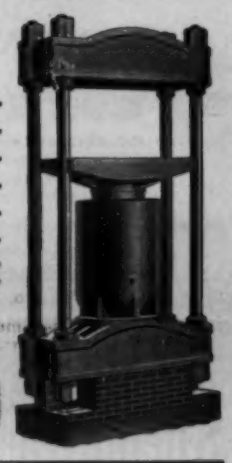
CORRESPONDENCE SOLICITED.

All Kinds of CALENDERS for PAPER MILLS, GLAZED PAPER and CARDBOARD MANUFACTURERS.



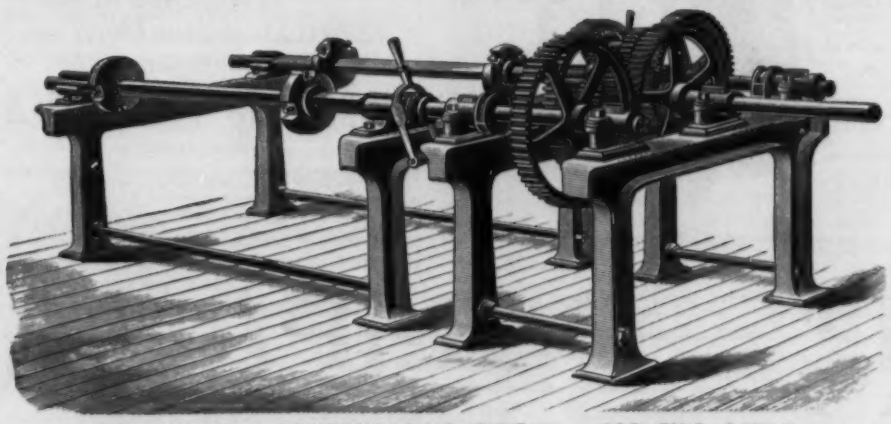


Dusters, Engines, Turbine Wheels, Cotton Rolls, Husk Rolls, Paper Rolls, Chilled Iron Rolls, Elevators, Wood Pulp Machinery, Hydraulic Presses.



THE BAGLEY & SEWALL CO.,

Watertown, N. Y.



THE BINGHAM COMPENSATING WINDER. FOR TWO REELS.

FOURDRINIER PAPER MACHINES.

LATEST DESIGNS. GREATEST RECORD OF PRODUCTION. HIGHEST DEGREE OF WORKMANSHIP. INSURING MINIMUM OF AFTER EXPENSES FOR REPAIRS.

Compensating Winders for any desired number of rolls.
Two and Three Plunger Stuff and Suction Pumps.
Hard Maple Press Rolls and Suction Box Covers,
Bronze, Rubber Covered and Chilled Iron Press Rolls,
Hydraulic Feed Pulp Grinders, Screens and Wet Machines—all of late and improved designs.

WHEN YOU WANT ANYTHING IN OUR LINE WRITE US BEFORE ORDERING ELSEWHERE.

DO NOT FORGET

That every ***New England Pulp Grinder*** ever made or sold in this country has been designed, built, and first sold by me; and I am sole owner of the right to use the name "New England" as applied to a pulp grinder, as the United States Patent Office records will show, and no other person is or has ever been interested with me in the manufacture of Pulp Machinery.

All the rights and interest of the Scott & Roberts Company and the New England Pulp Machine Company which were organized for the purpose of selling my pulp machinery were acquired by me more than four years ago, since which time many changes and improvements have been made in the New England Pulp Grinder.

I am prepared to furnish at short notice everything required for making ground wood pulp, including plans and specifications, and estimates for which I will furnish same; and erect the whole, if required, ***guaranteeing a greater production of pulp,*** with a given power and at a less cost for manufacture, than can be done by any other machines; and no pay asked until machines perform as stipulated.

Can furnish any of the leading ***Turbine Water Wheels,*** fifteen styles ***Pulp Grinders, Noiseless Screens, Wet Presses, Sawing Machines, Barkers, Splitters, Pumps, Shafting, Mortise Gears, Pulleys, &c.***

Remember you can have a ***guaranty*** of the ***cost*** of ***your mill;*** also of the ***cost per ton to manufacture the pulp.*** Liberal terms.

I have on hand ***six Pulp Grinders,*** three pocket, to grind wood 17 inches long; and ***eight Grinders,*** heavy pattern, to grind wood 24 inches long; also ***Barkers*** and ***Splitters.***

Many of the old style New England grinders can be rebuilt so as to greatly improve them.

More than **FOUR HUNDRED** ***New England Grinders*** in use.

Don't use an old superannuated machine, nor an inferior imitation, when you can buy a genuine, good Grinder at the low prices at which they are now offered.

OLIN SCOTT, Bennington, Vt.

FARREL FOUNDRY AND MACHINE CO.,

ANSONIA, CONN., U. S. A.

THE LARGEST MANUFACTURERS OF

Chilled Rolls

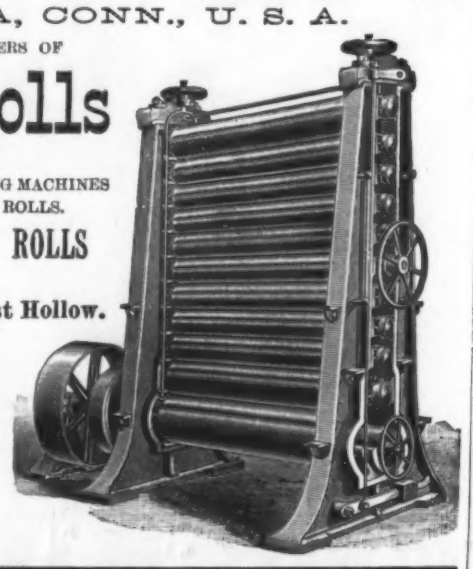
IN THE WORLD.

ALSO MANUFACTURERS OF GRINDING MACHINES FOR ALL KINDS AND SIZES OF ROLLS.

CHILLED AND DRY SAND ROLLS

FOR ALL PURPOSES.

Rolls Bored for Steam or Cast Hollow.

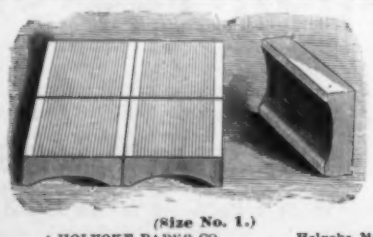


COMPLETE CALENDERS.

Lift Rods operated by wheels above for raising any number of the rolls.

Housings so made that the rolls may be taken out endwise through frame.

OLD ROLLS RE-GROUND AT SHORT NOTICE.



(Size No. 1.)

REFER TO

HOLYOKE PAPER CO.,	Holyoke, Mass.
PARSONS PAPER CO.,	Holyoke, Mass.
BYRON WESTON,	Dalton, Mass.
BREMAKER & MOORE,	Louisville, Ky.
KIMBERLY & CLARK CO.,	Appleton, Wis.
ALEX. BUNTEN & CO.,	Montreal, Can.
PATTEN PAPER CO.,	Appleton, Wis.
MORRISON, BARE & CASS,	Tyrone, Pa.

And many others.

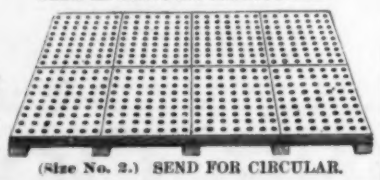
SAMUEL SNELL,

Holyoke, Mass.,

MANUFACTURER OF

FILTERING STONES,

Under the KLARY and SNELL Patents.



(Size No. 2.) SEND FOR CIRCULAR.

ESTABLISHED 1848.

JOHN WALDRON, NEW BRUNSWICK, N. J.,

MANUFACTURER OF ALL STYLES OF

COATING MACHINERY FOR LITHOGRAPH, LABEL, FANCY, GLAZED, BOOK AND SAND PAPERS.

Also Cardboard and Paper Hangings Machinery. Hilbers, Staib and Waldron Patent Hanging Up Machines. Patent Power Reeling Machines for Coated Papers and Cardboard. Embossing Machines, Paper Rolls, Polishing Machines, &c.

Machinery is universally used by the manufacturers of above goods in the United States and Canada.

BAKER & SHEVLIN,

Specialties for Paper and Pulp Mills.

THIS CUT SHOWS OUR WINDER SHAFT WITH SEGMENT PARTLY WITHDRAWN.

Patented.

THIS Shaft is designed for making rolls for plugging. Being perfectly round, it gives a roll practically true from the very centre to outside and a true centre for plugging, and a much more solid roll than with other shafts; it may be used on a drum winder, if desired. When segment is withdrawn, which requires but little strain, the pressure is sufficiently reduced to allow easy removal of shaft.

The above particulars mentioned are unquestionable advantages over other types of shafts now in use; the complete satisfaction those already in use are giving attest this fact.

ALSO MANUFACTURERS

BELLOWS SCREENS (Highest Award, World's Fair), **BEATING AND WASHING ENGINES, ROLL BARS, CYLINDER WASHERS, Etc.**

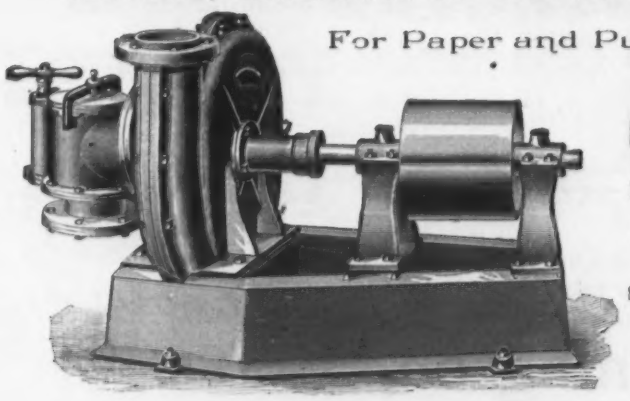
BAKER & SHEVLIN, Saratoga Spa, N. Y.

Established at Baldwinsville 1861—Removed to Syracuse 1881.

The Baldwinsville Centrifugal Pump Works.

VERTICAL, HORIZONTAL and SUCTION PUMPS

For Paper and Pulp Mills.



IRVIN VAN WIE,
Proprietor,
715-723 W. Fayette Street,
SYRACUSE, N. Y.

Send for Catalogue descriptive of our new Triplex Pumps.

IMPROVED MACHINES FOR MAKING SQUARE PAPER BAGS

By our PATENT methods of obtaining slack paper, severing bag lengths and applying paste, we are enabled to make perfect bags at a speed not attained by any other machine on the market. For full information and prices address

The Diamond Paper Bag Co.,
WILMINGTON, DEL., U. S. A.

E. F. WIECKERT

25 Water St.,
NEENAH, WIS.,
MANUFACTURER OF
COGS
AND ALL KINDS OF
MILL WORK.

You will save money if you have no cog pattern by drawing a cog out of a wheel, marking the exact width on the face cut and the exact thickness on the end cuts of this diagram and sending to me. If you want one key seat only, mark off one when you send card for pattern. I carry a complete stock of seasoned Hard Maple and can make Cogs on short notice. When you write for price give width and thickness of larger end. Write for pattern cards.

NOW IN PRESS.

Chemistry of Paper Making.

—BY—

R. B. GRIFFIN and A. D. LITTLE.

The most elaborate and practical book on the subject ever written.

OCTAVO, ABOUT 550 PAGES.

FULLY ILLUSTRATED.

This work has been in preparation for several years and will be ready for delivery at an early day.

PRICE $5.00, POST PAID.

Subscriptions will be filled in order of receipt.

CONTENTS.

INTRODUCTION.

General Laws of Chemistry: Principles of Chemical Physics: Chemical Arithmetic.

PART I.

General Chemistry.—With a short account of each element and its principal compounds; source, manufacture and properties of such compounds as are used in paper making.

PART II.

CHAPTER I.—**Cellulose.** Its chemical and physical properties, chemical relations and reactions.

CHAPTER II.—**Fibres.** Cellulose in its relations to the plant; the vegetable cell; the cell wall; changes which occur in the cell wall; lignin or incrusting matter; its chemical properties; characteristic markings of the cell wall in different fibres; characteristic cells other than fibres in different pulps. Classification of fibres: 1. Seed hairs; cotton, chemical and physical character of fibre, dimensions, analyses. 2. Bast fibres, as linen, jute, hemp, manilla, rhea, ramie, agave, sisal, sabaconia, &c.; occurrence in plant, separation of filaments; character, size, distinguishing features of filaments and ultimate fibres, analyses and chemical properties. 3. Fibres and other cells from whole stems and leaves, as straw, esparto, bamboo; measurements and characteristics of fibres, yields, analyses; characteristic cells found with fibres. 4. Wood fibres: growth of wood; cambium layer; spring and autumn wood; sap and heart wood; resins; bark and knots: analyses of woods; specific gravities; ash; fuel values: occurrence and character of all woods used for pulp making.

CHAPTER III.—**Processes for Isolating Cellulose.** Rag boiling; special treatments for various fibres, as jute, straw, esparto; review of miscellaneous processes for treating wood; the water process, aqua regia, &c.; the soda process, history; preparation of liquors, boiling, washing, recovery, sources of loss; analyses of chemicals and liquors; the sulphite process, history; general principles; the different systems; liquor apparatus; preparation and analyses of liquors; digesters; linings; boiling; subsequent treatment of pulp; waste liquors; recovery. The sulphide and sulphate processes.

CHAPTER IV.—**Bleaching.** General principles; bleaching agents; bleaching powder; deterioration; analyses; preparation of bleach liquors; use in chests, engines, drainers; hot bleaching; acid bleaching; use of alum; chlorination and oxidation of fibre; washing stock, antichlors; loss in bleaching; ozone bleach; hydrogen peroxide; permanganate; sulphurous acid; special processes for various fibres.

CHAPTER V.—**Sizing and Loading.** Rosin; preparation of size; free alkali; free rosin; alum; analyses of alums; free acid; basic alums; sizing power; resinate of aluminn; moss; casein; wax; starch; animal sizing; preparation and use; drying; loading; analyses of clays, agalite, pearl hardening, &c.; use; retention; ash; combined water; effect of alum and starch.

CHAPTER VI.—**Coloring.** Mineral colors; vegetable and animal colors; aniline colors; chemical properties; effect of alum and traces of bleach or alkali in different colors; distinguishing tests; effect of different waters.

CHAPTER VII.—**Water and Water Supply.** Character and analyses of different waters; ground waters; surface waters; river water; artesian well water; hard and soft waters; boiler scale; effect of waters on size and colors; various systems of filtration; use of alum; softening water; self purification of streams; natural filtration; effect of storage; vegetation in ponds; crenothrix; consumption of bleach by waters.

CHAPTER VIII.—**Chemical Analysis.** Description of apparatus and methods for testing the purity and strength of all paper making chemicals, colors, &c.; common impurities and adulterants given; full description of methods of analysis for sulphite and soda liquors, bleach solution, alums, &c.

CHAPTER IX.—**Paper Testing.** Full account of the latest German methods for testing and classifying papers; determination of ash; kind of sizing; amount of sizing; free acid and chlorides; strength; proportion of ground wood; kind and condition of fibres.

CHAPTER X.—**Electro-Chemistry,** with reference to bleaching, manufacturing of pulp, manufacturing of chlorine and soda.

APPENDIX.—Metric system; tables of specific gravities; strength of solutions; list of sulphite patents, &c.

Address all orders to the publishers,

HOWARD LOCKWOOD & CO.,
126 & 128 Duane Street, New York.

International Ultramarine Works

(LIMITED)

71 & 73 DUANE STREET, NEW YORK.

Works,
Rossville, Staten Island. P. O. Box 2553.

A. KLIPSTEIN & COMPANY,

BRANCH OFFICES: 120 Arch Street, Philadelphia. 134 Milk Street, Boston. 124 Michigan Street, Chicago.

122 Pearl Street, New York.

BLEACHING POWDER.

CORRESPONDENCE SOLICITED FOR CONTRACTS OVER 1894.

O'KEEFE & ORBISON,

ARCHITECTS,

APPLETON, WIS.

PAPER, PULP AND FIBRE MILLS.

WM. PICKHARDT & KUTTROFF,

98 Liberty Street, New York,

BRANCHES AT BOSTON, PHILADELPHIA, PROVIDENCE AND CHICAGO,

—IMPORTERS OF—

Aniline Colors, Carmine, Pulp Colors, Ultramarines.

LIQUID CHLORINE.

Schoellkopf Aniline and Chemical Co.,

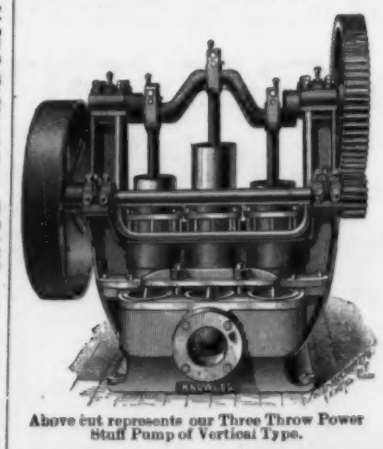
BUFFALO, N. Y.

We make a specialty of Colors for Paper Makers' use and will match any sample submitted to us.

CORRESPONDENCE SOLICITED.

BOSTON: 103 MILK ST. NEW YORK: 3 CEDAR ST.
PHILADELPHIA: 50 NORTH FRONT ST.

KNOWLES STEAM PUMP WORKS,



Above cut represents our Three Throw Power Stuff Pump of Vertical Type.

Builders of every known variety of

Pumping Machinery.

STEAM and POWER, SINGLE and DUPLEX, VERTICAL or HORIZONTAL PUMPS for

PAPER AND PULP MILLS

A SPECIALTY.

Stuff Pumps, Vacuum Pumps for Suction Boxes, Pumps for Aerophor Dampeners, Automatic Pumps and Receivers, Air Pumps and Condensers, Boiler Feed.

SEND FOR NEW ILLUSTRATED CATALOGUE.

183 DEVONSHIRE STREET, BOSTON.
93 LIBERTY STREET, NEW YORK.
163 SO. CANAL STREET, CHICAGO.

BOSTON BELTING COMPANY,

BOSTON. Established 1828 NEW YORK.

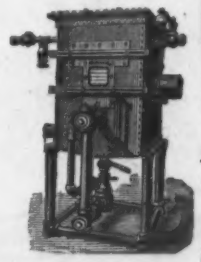
ORIGINAL MANUFACTURERS OF RUBBER GOODS.

RUBBER COVERED COUCH ROLLERS FOR FOURDRINIER, CYLINDER AND WET MACHINES.
(Warranty given with each Roller).

Also make *Rubber Covered Press and Sizing Rollers, Rubber Belting, Hose, Packing, Deckel Straps,* and all kinds of *Rubber Goods for Mechanical Purposes.*

256 to 260 Devonshire St., BOSTON.
100 Chambers Street, New YORK.

And Agencies in the principal cities of the United States, Canada and Europe.



WE GUARANTEE YOU

a very considerable saving in the items of water and fuel by the use of our **Vacuum Feed Water Heater and Purifier,** *and this means, of course, an extra profit on your output. The "how" will be found in a comprehensive Catalogue, which is yours for the asking, also Catalogues of the Webster Separator and Williames Vacuum System of Steam Heating.*

WARREN WEBSTER & CO.,

NEW YORK, 120 Liberty Street. CHICAGO, Monadnock Building. No. 2. ***CAMDEN, N. J.***

Wilbraham, has shut its mill down for a week.

A. W. Esleeck, treasurer of the Beebe & Holbrook Company, has returned from his vacation spent at Winthrop. H.

FOX RIVER VALLEY.

[FROM OUR REGULAR CORRESPONDENT.]

APPLETON, Wis., Aug. 7, 1894.

There is little change in the condition of business in this valley since last report. This is equivalent to saying that business is bad. It is now, as never before, a question of what the consumer will give for the manufacturer's product, not what the manufacturer asks or would like to ask. Prices have gone down, however, until it seems as though the bottom had surely been reached and the lowest record been established. By the first of next year new machines will be ready to go into operation in this district which will have a capacity of from 60 to 75 tons daily. One manufacturer estimates that the capacity of the machines at present in the valley is 40 per cent. in excess of the demands of the market, and in view of this it is a question where the outlet is to come in for the new machines referred to. These things will probably settle themselves when the time comes, however.

The newly formed Paper Manufacturers' Association has taken no further action regarding the closing movement for the month of August. The matter will probably be opened again at the end of the month or the first of next month.

The Grand Rapids *Reporter* makes the following statement regarding a very important water power deal which has just been consummated on the Wisconsin River, between the twin cities of Grand Rapids and Centralia, bearing largely upon the paper manufacturing interests:

"For some time the question of uniting the water powers of the twin cities has been under discussion with little hope of accomplishing this object. We take great pleasure in reporting this week that articles of agreement were signed and placed on record Monday, July 30, which provide for the purchase and improvement of water powers and lands on the Wisconsin River and the renting and sale of the same, including mills, machinery, fixtures, tools, &c., as may be required by said corporation in the purchase of water powers and lands. The capital is fixed at $300,000, in 3,000 shares at $100 each. The incorporators include all the water power properties, except two small ones. Those who signed the articles are Thomas E. and John L. Nash, B. G. Chandos, C. A. Spencer, F. MacKinnon and Geo. E. Hoskinson. They have agreed upon a board of arbitrators who are to place a cash value on each property, including power, lands, buildings, &c. The board consists of Peter W. Thom and G. W. Orbison, of Appleton, and Frank A. Russell, of Neenah. They will meet in the twin cities as early as possible, view the properties and place a value on each. Their decision is final and each firm or individual above mentioned has agreed to stand by the award made by this committee. After this is done deeds will be made out to the officers of the new company, who will in return issue stock to the amount of the value of their property as fixed by the board of arbitration. When this is completed steps will be taken for the erection of an immense stone dam from a point just above the Jackson Milling Company's flouring mills on the Centralia side across the river to the Nash Brothers mill on the Grand Rapids side. This dam will give a combined power of about 8,000 horse power. The water can be used on the Centralia side in the races just as they are with very little expense for repairs, while on the east side a large iron pipe or flume will be necessary to carry the water down the river for distribution.

"The organization of this Consolidated Water Power Company means a great deal toward the upbuilding of the twin cities. The erection of the dam alone will cost at least $100,000, and probably more. The use of 8,000 horse power is sufficient to run machinery enough to employ 10,000 people if properly applied. This company represents the combined interests and properties of the Pioneer Wood Pulp Company, Grand Rapids Milling Company, Wisconsin Wood Pulp Company, Grand Rapids Water Power Company and B. G. Chandos. It also includes about 700 acres of land and several miles of shore rights on the Wisconsin River."

The two new sulphite digesters at the mill of the Combined Locks Paper Company were charged with wood for their trial cooking to-day. They have just undergone a very severe test of standing under steam pressure. They were kept under pressure for four days without showing evidence of leaking a single drop. As a test of the economy of heat secured by the thick, non-conducting lining, it may well be mentioned that last Saturday at 5 P. M. they were filled with steam at 66 pounds pressure; the steam was then turned off, and on Monday morning at 8 o'clock it was found to have sunk only to 20 pounds pressure. These digesters, as has been stated, are equipped with the lining invented by S. R. Wagg, of this city.

The employees of the paper mills at Kimberly subscribed $115 for the relief of the fire sufferers at Phillips. The city of Appleton sent $750.

A paper maker from the East, whose name could not be learned, was run over by the cars and killed near Kaukauna last Sunday. He was in a very destitute condition, and was little better than a tramp, although he had met an acquaintance in Kaukauna and had a promise of work today. He was subject to fits, and probably had one when he was run over, as he was lying directly in the middle of the track.

The breaking of one of the main driving shafts in the mill of the Strange Paper Company, of Menasha, necessitated a shut down of a couple of days last week. One of the shafts in the finishing room of the De Pere mill of the Shattuck & Babcock Company also broke last week and crippled the room for a short time.

John Van Alstyne, employed in the office of the Kimberly & Clark Company, in this city, had an accident yesterday which might have proved very serious. He is a bicycle rider, and in going down one of our steep hills met a double team driven by C. A. Waterbury, the well-known felt man. In some way a collision occurred, the bicycler going under the feet of the horses. The carriage did not go over him, but one of the horses stepped on his head and cut an ugly gash, which did not injure the skull, however.

The mill of the Manufacturing Investment Company in this city will go into operation again within a week or ten days. The improvements and repairs are completed and the accumulated stock is exhausted.

A small blaze occurred in the No. 1 mill of the Marinette and Menominee Paper Company a day or two ago, which caused no special damage, however.

The Gilbert Paper Company, of Menasha, is putting in one of the Jones under feeds for its boilers.

Howard Murphy, of this city, has taken a contract for getting out about 5,000 cords of spruce annually for three years for the Riverside Fibre Company, of Appleton. He will take a crew of forty men into camp this week.

A portion of the machinery for the new mill of the Wolf River Paper and Fibre Company, of Shawano, arrived last week, consisting of water wheels, shafting, &c. Work began last week on a sidetrack to the pulp mill.

The Fox River Paper Company, of this city, has engaged H. T. Hattersley, of Cincinnati, as sales agent, and he will hereafter call upon the trade in its interests. Mr. Hattersley will remove his family to Appleton in a short time.

W. B. Murphy, of this city, has lately been somewhat under the weather. He came very near to being prostrated by the heat, and has been taking things somewhat easily since.

G. A. Whiting, of Menasha, also had a very narrow escape from prostration in Chicago last week. He had to be sent to his hotel and have his head packed in ice for a while. He has not yet recovered his usual health.

John Strange, of Menasha, has for the last three weeks been rusticating with his family at a camping resort. It is close enough to business so that he is within call, and yet removed at some distance from the madding crowd. He is devoting his leisure to planning that fine office building with which he is shortly to grace the vicinity of his mill.

Superintendent Friend, of the Howard Paper Company, has lately returned from a business trip to St Louis. FOX RIVER.

WESTERN NEW YORK.

[FROM OUR REGULAR CORRESPONDENT.]

NIAGARA FALLS, N. Y., August 9, 1894.

These are lively times with the Niagara Falls Paper Company and the three big machines are grinding out paper and board at the rate—well, of many tons a day. Great interest has centred in the big 136 inch Fourdrinier machine built by the J. H. Horne Sons Company, and many inquiries have been made as to the work it was doing and its reliability. Manager Morgan kept his own counsel in this respect until he was satisfied that it would do no harm to the company to let the paper world know just how his wonder worker was doing. The runs it has made have proved eminently satisfactory, and recently during a long run one night's estimate was made for twelve hours and the monster averaged from twenty-two to twenty-three tons a day. This was no speeding or push, but was on a steady run of several days. The quality of paper turned out is also superior, and all in all the company is satisfied with the machine. The other machines are also working successfully and making as much paper as the company estimated they would on the start, even with small orders where there is a great deal of changing, necessitating consequently considerable delay.

Recent additions to the mill in the shape of new machinery show that the Niagara Falls Paper Company is determined to make its plant the most perfect of its kind in existence. Three new wet machines of the Bagley & Sewall (Watertown, N. Y.) pattern have been added; also three "Success" screens from the Friction Pulley Company, of Sandy Hill, N. Y.; three stuff pumps from the Knowles Steam Pump Works, of New York city, and other minor equipments. A Marshall refining engine, made by the Marshall Engine Company, of Turner's Falls, Mass., has also been added.

The pulp part of the mill is running smoothly and regularly. The water power development of the Geyelin turbines has proved a success. It was the first of its kind at Niagara, and assured others that there was a field here in modern water power development which could not be duplicated the world over.

The paper company's steam barge St. Louis arrived from Michigan this morning at the boom yards up the river with a large load of spruce logs for the pulp mill. The supply for the season is pretty much all down now and at the boom yards on Grand Island. Four more boats are expected, which will close up the business.

W. E. T.

NORTHERN NEW YORK.

[FROM OUR REGULAR CORRESPONDENT.]

WATERTOWN, N. Y., August 9, 1894.

Over in the Adirondacks they are making preparations for next season's cutting of timber in Dr. Webb's preserve. The doctor has sold to Albany parties the right to cut trees more than 10 inches in diameter on township No. 8 of Herkimer County. This right embraces about 32,000 acres. Two lumber camps have already been started in these districts. One of the largest pulp wood camps will be erected on Big Safford Lake. The north branch of Moose River and Safford Creek are to be dammed to enable the lumbermen to float the logs down to McKeever, a small place south of Fulton Chain Station, where the timber will be sawed. Pulp mills will also be erected at that point. Some splendid spruce is to be found in this district, and New York capital is said to be behind the mills to be erected.

The site of the proposed new mills at Piercefield Falls is on the Racquette River, in the township of Piercefield, St. Lawrence County. The river at this point has a natural fall of 30 feet, and easily 3,000 to 6,000 horse power can be developed. The Adirondack and St. Lawrence Railroad runs within a short distance of this fall and a spur can easily be constructed.

The International Pulp Company is investing more capital in this part of the State. It has formed the Oswegatchie Electric Light and Power Company, which corporation is to supply light and power in the towns of Gouverneur, Edwards and other St. Lawrence County towns. The directors of the company are: H. Walter Webb, Col. Augustus C. Paine, William J. Arkell, Augustus L. McCrea, Jr., and Augustine J. McDonald.

William Edgar, an employee at C. R. Remington's mill, had his left foot badly smashed this week. While removing a pressure head from a cylinder it slipped through his hands, falling on the foot.

Wendler & Co., of Carthage, are placing a new splitter on the market. It is an invention of C. H. Campbell, and is much different and better in many respects than the old splitter. W. E. T.

Supplies—Bureau of Engraving and Printing.

Awards have been made as follows for supplies for the Bureau of Engraving and Printing:

PAPER.

Item 1. 5 rms plate 24x32, 150 lb, all bids rejected.

2. 10,000 lbs pressboard American, 6¼c. per lb., Conrow Bros.

3. 250 rms. manilla 30x40, 50 lb. strong fibre 3 9-10c per lb, Easton & Rupp.

4. 50 rms do 80 lbs, 3 9-10c. per lb, do.

5. 3 rms do 100 lbs, 3 6-10c per lb, E. R. Bulkley.

6. 5 rms manilla 30x42, 170 lbs flat strong fibre, sized and calendered, 3 8-10c. per lb, do.

7. 15 rms manilla 30x40, 225 lbs do, 3 7-10c per lb, Chas. M. Stoever.

8. 1 rm white record 18x23, 36 lbs, 14¼c per lb, A. G. Elliot & Co.

9. 10 rms white wove writing, 14x17, 18 lbs, 7c per lb, Dobler & Mudge.

10. 1 rm black glazed 20x24, no bids.

11. 20 rms book 26x40, 35 lbs flat, $1.25 per rm, Conrow Bros.

12. 1 rm book 24x38, 60 lbs, $3 per rm., Dobler & Mudge.

13. 5 rms marble 18½x29½, $3.50 per rm, Woolworth & Graham.

14. 50 rms red glazed 20x30, 24 lb, $2 per rm, Dobler & Mudge.

15. 600 rms shoe manilla 11x15, 400 sheets to rm, 8c per rm, Easton & Rupp.

16. 1 rm white tissue, all bids rejected.

17. 10 rms Whiting's writing 14x17, 18 lb all colors, $1.80 per rm, Chas. M. Stoever.

18. 12 sheets Reynolds' bristol board, all bids rejected.

19. 1 ton strawboard 26x38 any number $30 per ton, S. M. Kennedy & Co.

20. 1 ton tarboard 22x28 any number $46 per ton, Woolworth & Graham.

21. 5,000 to 50,000 sheets bond and parchment white, not yet awarded.

22. 5,000 sheets colored bond, not yet awarded.

23. 8,000,000 sheets printing 18½x20¼, 30 lbs to 1,000 sheets, not yet awarded.

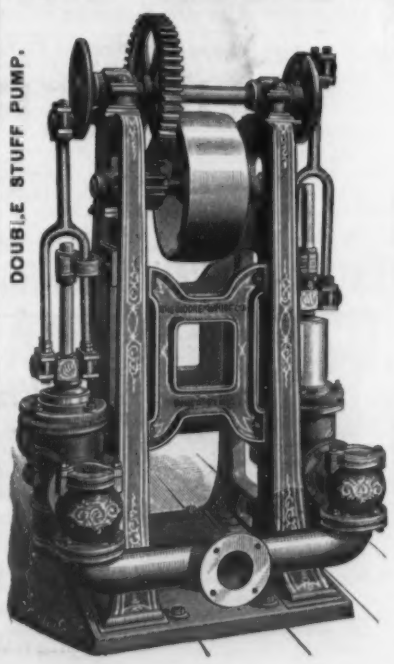
THE MOORE & WHITE CO.,

15th Street and Lehigh Avenue,

PHILADELPHIA,

Germantown Junction Station

Pennsylvania R.R.



DOUBLE STUFF PUMP.

Paper Machinery

FOURDRINIER

AND

Cylinder Machines,

FRICTION

CLUTCH

PULLEYS,

&c., &c.

THREE PLUNGER SUCTION PUMP.

AGALITE PULP

As now manufactured under our improved processes has no competitor as a filler, either for News or

- Fine
- Book
- Papers.

FOR proof of this we refer to the most successful makers of

Book and **News**

in this country and in Europe. Our

AGALITE FILLER

GIVES the brightest color and most beautiful finish in all classes of paper, as it contains **no moisture,** and its retention in papers being nearly double that of other fillers, it is by far the **cheapest.**

International Pulp Co.

TIMES BUILDING,

NEW YORK.

Turbine.

The illustrations present views of a new and improved turbine, Figure 1 being a front elevation, Fig. 2 a face view of one-half of the wheel, Fig. 3 a diametrical section of the wheel, Fig. 4 a central longitudinal section of the nozzle, Fig. 5 a front elevation of the same, Fig. 6 a rear elevation of the nozzle, and Fig. 7 a longitudinal section of a double nozzle for a reversing turbine.

The object is to construct a turbine—to be used with steam, water or compressed air as the propelling force—formed with a smooth, uninterrupted exterior surface which will offer a minimum of resistance to the air, and in which the nozzle through which the propelling medium is ejected will be partly surrounded by the propelling wings.

The wheel has a smooth exterior and an annular chamber containing wings for receiving the impact of the propelling medium, and having a central free space for the ejector nozzle. It also has a nozzle constructed to project steam in a thin, wide stream against the wings, and arranged to draw the air from behind the nozzle by induction and project it in a stream impinging on the jet of steam. A double nozzle is arranged to discharge the propelling medium in either direction for the purpose of reversing. The turbine is formed of aluminum, for the purpose of reducing the weight and facilitating reversal.

It will be here described as a steam turbine, having an annular space of circular cross section, for containing the steam nozzle.

Upon the shaft A, journaled in the frame B, is mounted the turbine wheel C, which is formed of two similar halves, *a a'*, each provided with a boss, *b*, and having a web, *c*, and rim, *d*, of approximately semi-elliptical form, and two halves, *a a'*, being oppositely arranged with respect to each other and fastened upon the shaft by means of the nut *e* which clamps the wheel against the collar *f* formed on or attached to the shaft. The semi-elliptical half rims *d*, when placed together, form a practically elliptical rim, in the centre of which is formed an annular space, *g*, of circular cross section, and on opposite sides of the annular space *g* the rim is cut away by means of a suitable milling cutter, leaving the inwardly projecting wings *h* which extend from a point near the periphery of the wheel to a point within the annular space *g*.

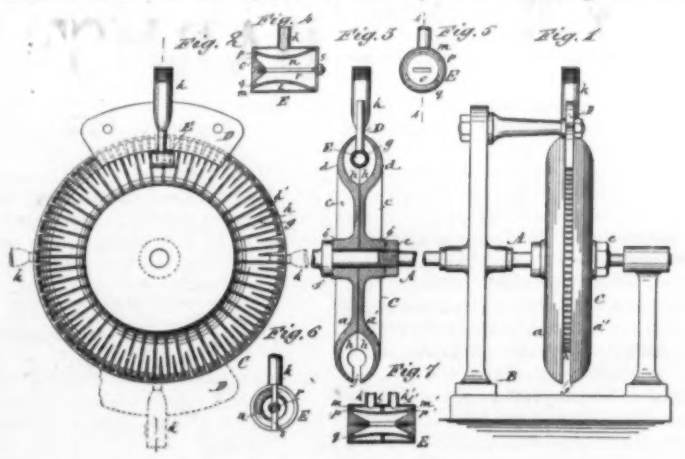
In cutting away the interior of the rim to form the wings *h*, intermediate wings *h'* are formed, which are shorter than the wings *h* and project inwardly from the outer portion of the wheel. This arrangement will be followed in the construction of very small turbines, but in larger turbines, where the wings *h* are more nearly parallel, the intermediate wings *h'* may be omitted.

From the periphery of the turbine wheel down to the annular space *g* is formed a slot, *j*, for receiving the plate D, which supports the nozzle E and the pipe *k*. The plate D is rigidly supported in such relation to the wheel C as to allow the wheel to revolve freely without coming into contact with the plate. The nozzle E is made annular, with the steam space *l* having an annular discharge opening, *m*, the steam space *l* communicating with the pipe *k*. Within the annular steam space *l* is a longitudinal opening, *n*, partly closed by a cone, *o*, leaving an annular space, *p*, the cone being held in its position by distance pieces, *q*, and retained by a bolt, *r*, which passes through a crossbar, *s*, extending across the rear end of the nozzle E.

Although only one nozzle is shown, in practice the turbine will have two or more nozzles, as indicated by dotted lines; and furthermore, where it is desirable to reverse the turbine, the nozzle is made double, as shown in Fig. 7, having two supply pipes, *k*, *k'*, two annular steam spaces, *l l'*, two annular discharge openings, *m m'*, and two annular spaces, *p p'*. The annular spaces *m m'* and *p p'* open in opposite directions. Steam admitted to the nozzle E through the pipe *k* enters the annular space *l*, and is distributed and discharged through the annular opening *m*, the discharge opening being of such character as to give to the annular jet of steam a divergent form, causing it to strike the wings *h h'*. In issuing from the annular opening *m* the steam by induction draws air through the annular space *p*, thus withdrawing the air from behind the nozzle and projecting it against the annular stream of steam. This arrangement to a great extent removes the back pressure of air behind the nozzle, and its projection in a stream more divergent than that of the steam causes it to act to some extent as an abutment for the steam, for holding it against the wings *h h'*.

When the turbine is to be made reversible, the double nozzle shown in Fig. 7 is used, and steam is admitted to one or the other of the parts of the nozzle according to the direction in which the wheel is to revolve. To facilitate the reversal of the turbine the wheel of a reversible turbine is made of aluminum, thus reducing the momentum of the wheel, so that it may be more readily stopped and started in the opposite direction. Where the turbine is not intended to be reversible, it is preferably made of bronze or some unoxidizable material having sufficient strength.

This turbine offers no roughness or projections on the exterior to act upon the air and thus cause resistance. The wheel having wings which are practically radial, and being provided with a peripheral groove for the discharge of the contents of the hollow rim, when it revolves at a high velocity a partial vacuum is formed by centrifugal force, which adds to the efficiency of the turbine by removing air resistance. Centrifugal force also throws out every particle of water resulting from the condensation of steam.



IMPROVEMENT IN TURBINE WHEELS.

New Inventions—XLVII.

[WRITTEN FOR THE PAPER TRADE JOURNAL.]

BY GEO. DAMON RICE.

Bicycle mechanics have long striven to invent an easier riding saddle for modern safeties. They have devised all sorts of devices, some of which have been used a while, then discarded. Other kinds have been successful on account of being the best, and are in use now. It is notable that the most approved saddle is the easiest riding kind. Hence, of the numerous saddles invented during the past five years, many good and substantial ones have been thrown aside, owing to the fact that they do not ride easy. Others, although weaker in construction and less attractive in appearance, have been applied simply because they are nice for the rider to sit upon, and shocks are reduced. Has it been left for a paper mill mechanic to invent a saddle made on the pneumatic principle, and from paper material? It would seem so. Anyway, the writer has been shown a saddle containing air, and it is as soft as a pillow. The saddle is made of a substance consisting principally of paper. A desire to procure a material which will hold air under heavy pressure, has evidently given rise to the idea of using paper, for the inventor tried leather, rubber and one or two other substances before he thought of paper.

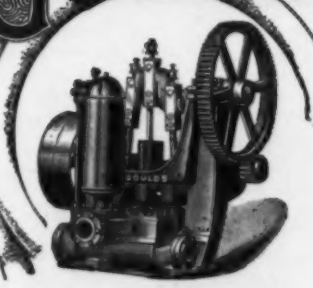
So long as no other saddle of a better character can be procured leather does well enough. By the use of springs a shock is broken somewhat, yet the jar of every stone is felt by the rider, and in lengthy rides the discomfiture arising from contact with the seat is most wearing on his powers. The writer has found that his leather saddle becomes harder at the end of each mile. If one rides with his nose on the handle and his weight on his arms it is different, but most riders now sit upright with their weight on the seat. Hence the advantage of a soft seat. The inventor mentioned thought that a rubber saddle might be good. He tried one, and after a few rides it drew out of shape and became worthless. Rubber is too soft, leather is too hard. Then it flashed into the inventor's mind that paper pulp specially prepared might do. He molded a saddle, then devised one bag-shaped so that he might pump it full of air. He secured it to the wheel, and the riding was made smoother and softer.

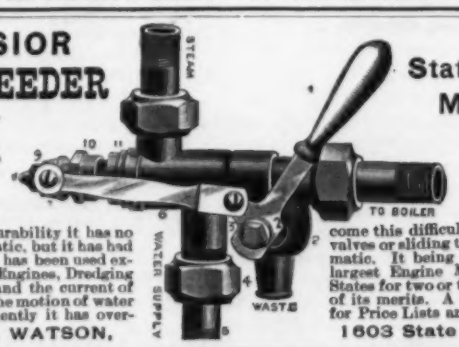
The inventor makes his saddles in a crude manner, and one at a time. A couple of quarts of well subdued pulp are compounded with certain ingredients, and the saddle is cast in two parts by means of molds formed in casting sand. The two parts are the top and bottom, around the edges of which are the ridges, which are lapped and sewed together and also cemented. A more durable way of casting them will be tried later. Before attaching the sides together, the adjustments are riveted so as to hold the saddle to the saddle bars. Once the sides are fixed together all that needs to be done is to attach the pump, blow up the saddle and all is ready.

This slow, hand made style of making the saddles is costly and crude; but we expect this in new things. When the saddles are made by machinery, and the parts are cast properly, a nicer as well as a cheaper job will result. It is said that the saddles are not only much easier riding, but that their actual cost will be less than those made of leather, and the lasting powers will be as long as if not longer than the saddle, now in use.

Wood Pulp, Soda AND Sulphite,
IMPORTED BY
G. RAU, TIMES BUILDING, **New York.**
SOLE AGENT FOR THE U. S. AND CANADA:
ROZÈS AINÉ & FRÈRES, Agen,
Well-known Packers of Linens and Cottons.

"RUDDER" BRAND
SODA-ASH BLEACHING POWDER SALT-CAKE
RUDDER B.T.&Co. BRAND
CHEMICALS
PURE AMMONIA-SODA ALKALI
AND
HIGH STRENGTH **BLEACHING POWDER**
ARE THE BEST FOR PAPER MAKERS' USE.
Consignments regularly received at all Ports.
AMERICAN OFFICE: 66 BROAD STREET, NEW YORK.
BOWMAN, THOMPSON & CO., Ltd., NORTHWICH, ENGLAND.

GOULDS PUMPS Are Better

The Power Boiler Feed Pump
Is acknowledged the most economical type Boiler Feeder in use.
Goulds Triplex Power Pump is the most efficient of this class.
Send for new Catalogue. "Efficient Power Pumps and Applications."
THE GOULDS MANUFACTURING CO.,
Manufacturers of PUMPS and HYDRAULIC MACHINERY,
Works & Main Offices: Seneca Falls, N. Y., U. S. A. Warerooms: 16 Murray St., New York City.
Or Nearest Branch Agency—THE GOULD CO., 22 and 24 North Canal St., Chicago, Ill.
SMITH & WINCHESTER CO., 19 to 37 Wendell St., Boston, Mass. WOODIN & LITTLE, 212 & 214 Market St., San Francisco, Cal.
H. O. NELSON MFG. CO., Eighth & St. Charles Streets, St. Louis, Mo. L. H. BATES, 321 Vine Street, Philadelphia, Pa.

EXCELSIOR BOILER FEEDER — AND — **Watson Jet Pump.**


FOR Stationary, Marine and Locomotive USE.
For simplicity and durability it has no equal. It is not automatic, but it has had the severest test, and it has been used extensively on Traction Engines, Dredging Machinery and Boats, and the current of water is not broken by the motion of water or a great jar, consequently it has overcome this difficulty, without the use of valves or sliding tubes used by the automatic. It being used by many of the largest Engine Manufacturers in the States for two or three years is evidence of its merits. A trial solicited. Send for Price Lists and Discounts.
M'f'd by N. A. WATSON, 1603 State St., ERIE, PA.

EAGLE BRAND THE BEST
NO TAR. **ROOFING** NO TAR.
It is superior to any other Roofing and unequaled for House, Barn, Factory or Outbuildings; it costs half the price of shingles, tin or iron; it is ready for use and easily applied by anyone; it is the best roofing in the market in durability. Send for estimate and state size of roof.
RUBBER PAINT.
The best known Paint in the world for Tin, Iron or Shingle Roofs, Fences, sides of Barns and Outbuildings; it costs only 60 cents per gallon in barrel lots, or $4.50 for a 5-gallon tub. Color, dark red. It will stop leaks in tin or iron roofs that will last for years; it is guaranteed not to peel, crack, scale nor wash off and it's fireproof against sparks. TRY IT.
SHEATHING PAPER.—900 square feet, $3.00; keeps buildings cool in summer, warm in winter.
EXCELSIOR PAINT AND ROOFING CO., 155 DUANE STREET, NEW YORK, N. Y.

TRADE MARK
AJAX ANTI-ACID METAL,
FOR THE RESISTANCE OF ACIDS AND ALKALIES.
ESPECIALLY ADAPTED FOR
Digesters, Sulphite Machinery, &c., &c. We sell the Metal in INGOTS, furnish CASTINGS, any size as per patterns, and COCKS, VALVES and FITTINGS of every description.
THE AJAX METAL CO., INCORPORATED, **PHILADELPHIA, U. S. A.**
WE INVITE CORRESPONDENCE.

CHAS. B. PRIDE, APPLETON, WIS.
Mill Architect and Contractor.
Specialties: PAPER MILLS AND SULPHITE FIBRE MILLS.
Plans Furnished and Mills Constructed on shortest possible notice.

ALUM! **THE MERRIMAC POROUS ALUM** is unsurpassed for **purity** and good results.
All other grades of Alum for paper makers' use and for filtering purposes. Address
MERRIMAC CHEMICAL CO., 13 Pearl Street, Boston.

AMERICAN STAVE & COOPERAGE CO.,
Manufacturers of Cedar, Cypress, Pine or Oak
Round and Square Tanks
OF ANY SHAPE OR CAPACITY.
OFFICES:
Broad and Beaver Sts., NEW YORK. *160 State St.,* BOSTON.
Illustrated Catalogue upon application.

Imports and Exports.

IMPORTS AT NEW YORK.

FOR THE WEEK ENDED AUGUST 3, 1894.

An. Colors..	428	$29,654	Paper.....	572	$33,160
Alum.....	—	—	Steel Pens...	1	59
Alum's Cake	—	—	Stationery...	4	245
Bl. Powders	674	12,015	Slate Pencils	170	751
Soda Ash...	4,408	10,502	Clay.....	—	1,020
Soda, Caus.	150	2,067	J'te B'ts, &c.	—	—
Soda, Sal....	280	650	P. Hangings	6	321
Soda, Hypo.	180	234	P'p'r Stock..	2,847	31,949
Ultramarine	41	649	Terra Alba..	—	—
Books.....	396	41,062	Waste.....	—	—
Newspapers.	122	5,797	Wood Pulp..	1,713	8,198
Engravings.	102	9,276			
Ink.....	—	—			
Lead Pencils	10	1,630	Totals....	12,104	189,269

Imports General Merchandise for the week ended August 3, 1894.....$8,647,758

IMPORTS OF PAPER STOCK AT NEW YORK.

FROM JANUARY 1 TO AUGUST 8, 1894.

Whence Imported.	*Rags.*	*Old Paper.*	*Chemical Fibre.*	*Ground Wood.*	*Manilla Stock.*
	Bales.	Bales.	Tons.	Tons.	Bales.
Alexandria...	1,249	....	....	....	....
Antwerp.....	357	275	678	....	9,382
Aspinwall....	90	....	....	....	....
Bordeaux.....	684	....	....	....	....
Bremen	672	25	6	....	5,447
Bristol.....	....	....	....	....	3,489
Buenos Ayres.	125	....	...	....	....
Calcutta.....	....	....	....	....	2,797
Cent. America	60	....	....	....	....
Christiania....	....	....	511	....	654
Copenhagen..	358	....	1,197	....	1,369
Dublin.....	....	186	....	....	....
Dundee.....	....	....	....	....	658
Dunedin.....	....	....	....	....	183
Fiume.....	....	....	90	....	....
Geestemunde.	252	....	....	....	1,309
Genoa.....	....	....	...	....	4,350
Glasgow.....	204	77	....	....	243
Gothenburg..	91	....	107	....	....
Hamburg.....	1,313	251	400	....	3,177
Hamilton.....	....	....	....	....	42
Hiogo.....	9,001	....	....	....	....
Hong Kong...	43	....	....	....	....
Hull .....*a*	2,517	185	923	....	12,674
Kobe.....	32,296	....	....	....	....
Leghorn.....	2,139	....	....	....	....
Leith.....	....	159	....	....	138
Liverpool.....	1,030	840	....	....	17,585
London.....	3,361	1,434	20	....	8,421
Marseilles....	466	....	....	....	486
Nassau.....	48	....	....	....	....
Newcastle....	....	73	....	....	2,279
Rio.....	26	....	....	....	..
Rotterdam....	1,030	119	897	....	8,840
Southampton.	....	....	....	....	160
Stettin.....	2,372	....	696	....	7,481
Trieste.....	....	....	49	....	....

a. Including 347 bales cotton waste.

NEW YORK IMPORTS.

FROM JULY 31 TO AUGUST 8, 1894.

Paper Stock.

F. Bertuch & Co., Friesland, Antwerp, 20 bs. manillas.

Horace Dutton & Co., Llandaff City, Bristol, 136 bs. manillas.

F. Bertuch & Co., Norge, Christiania, 105 tons chemical fibre.

F. Salomon & Co., by same, 180 bs. bagging.

F. Salomon & Co., Russia, Hamburg, 75 bs. rags, 31 bs. papers, 112 bs. manillas.

James Pirnie, Hindoo, Hull, 221 bs. bagging.

Lewy Brothers, by same, 355 bs. bagging.

Burgass & Co., by same, 236 bs. bagging.

Castle & Gottheil, Alsatia, Leghorn, 350 bs. rags.

Jessup & Moore Paper Company, by same, 105 bs. rags.

James Pirnie, Nomadic, Liverpool, 155 bs. manillas.

J. W. Mason & Co., Bovic, Liverpool, 130 bs. manillas.

James Pirnie, by same, 1,101 bs. manillas, 15 bs. rags.

G. Rau, Schiedam, Rotterdam, 31 tons chemical fibre.

G. W. Millar & Co., by same, 257 bs. bagging.

Train, Smith & Co., Spaarndam, Rotterdam, 90 bs. bagging.

Paper.

American Trading Company, Glenogle, Shanghai, 21 cs.

P. McHugh & Co., Majestic, Liverpool, 2 cs. hangings.

L. De Jonge & Co., Rotterdam, Rotterdam, 14 cs.

G. W. Sheldon & Co., by same, 32 cs.

E. & H. T. Anthony & Co., by same, 10 cs.

Miller & Flinn, by same, 3 cs.

Henry Griffin & Sons, by same, 4 cs.

H. S. Leclercq & Co., by same, 2 cs.

R. F. Downing & Co., by same, 16 cs.

Photo Paper Supply Company, Weser, Bremen, 17 cs.

Engel & Epstein, Russia, Hamburg, 2 cs.

Henry Lindenmeyr & Sons, by same, 6 cs.

Henry Lindenmeyr & Sons, Spaarndam, Rotterdam, 31 cs.

F. R. Arnold & Co., La Navarre, Havre, 28 cs.

E. Fougera & Co., by same, 42 cs.

J. C. Druckleib & Co., by same 41 cs.

Gluckman & Spiegel, by same, 5 cs.

F. W. Devoe & C. T. Raynolds Company, by same, 7 cs.

F. J. Emmerich & Co., by same, 2 cs.

BOSTON IMPORTS.

FROM AUGUST 2 TO AUGUST 8, 1894, INCLUSIVE.

Paper, &c.

Wm. Guild & Co., Catalonia, Liverpool, 5 bs. periodicals.

J. Dickinson & Co., by same, 10 cs. paper.

Geo. C. Whitney, by same, 1 cs. Christmas cards.

Paper Stock.

Train, Smith & Co., Scandinavian, Glasgow, 117 bs. waste paper.

Horace Dutton & Co., by same, 107 bs. waste paper.

Horace Dutton & Co., Oranmore, London, 58 bs. rags, 295 bs. flax waste.

W. F. Corne, Philadelphian, Liverpool, 17 bs. rags.

True & McClelland, by same, 46 bs. waste paper.

Train, Smith & Co., Carlisle City, London, 100 bs. waste paper.

T. F. Ring, by same, 68 bs. flax waste.

Crocker, Burbank & Co., by same, 141 bs. waste paper.

Wheelwright Paper Company, by same, 95 bs. waste paper.

Robert Bishop, by same, 50 bs. waste paper.

Horace Dutton & Co., by same, 17 bs., 195 coils manillas.

Bleaching Powder.

J. L. & D. S. Riker, Kansas, Liverpool, 179 cks.

J. L. & D. S. Riker, Philadelphian, Liverpool, 80 cks.

Linder & Meyer, by same, 55 cks.

Jerome Marble & Co., by same, 19 cks.

Soda Ash.

Wing & Evans, Catalonia, Liverpool, 33 cks, 400 bags.

A. Klipstein & Co., by same, 24 cks.

J. L. & D. S. Riker, Philadelphian, Liverpool, 400 bags.

Wing & Evans, by same, 77 cks., 400 bags.

Linder & Meyer, by same, 20 cks.

Soda Crystals.

Warren & Co., Kansas, Liverpool, 420 bbls.

Crude Sulphur.

Linder & Meyer, Philadelphian, Liverpool, 2,668 bags.

PHILADELPHIA IMPORTS.

FOR THE WEEK ENDED AUGUST 4, 1894.

Paper Stock.

John T. Bailey & Co., Siberian, Glasgow, 97 bs. bagging.

Soda Ash.

Order, Siberian, Glasgow, 47 cks.

Bleaching Powder.

Order, Siberian, Glasgow, 16 cks.

Same, Illinois, Antwerp, 59 cks.

Venetian Red.

Lucas & Co., Southwark, Liverpool, 200 cks.

EXPORTS of Paper, &c., from New York for the Week Ended August 7, 1894.

BOOKS, cases, to Liverpool, 11; Antwerp, 1; Central America, 6; Argentine Republic, 28; Chili, 1; Havre, 2; London, 5; Newfoundland, 14; Colombia, 19; Venezuela, 1; Beyrout, 2; Brazil, 9; British Honduras, 1 pkg.; British West Indies, 12; Danish West Indies, 1; Dutch Guiana, 1; Hayti, 3; Nova Scotia, 1.

PAPER, to Cuba, 654 pkgs.; British West Indies, 556 pkgs.; London, 427 pkgs.; Central America, 21 pkgs.; Liverpool, 215 bdls.; British Australasia, 411 pkgs.; Brazil, 1 pkg.; Colombia, 29 pkgs.; Hayti, 17 pkgs.; Hamburg, 4 pkgs.; Leipsic, 4 cs.; San Domingo, 6 cs.; Mexico, 44 pkgs.; Newfoundland, 1 cs.; Porto Rico, 1 cs.; British Guiana, 355 pkgs.; Bremerhaven, 32 cs.; British Honduras, 75 pkgs.; Bremen, 1 cs.; Christiania, 10 pkgs.; Danish West Indies, 1 pkg.; Dutch West Indies, 11 pkgs.; Ecuador, 2 pkgs; French West Indies. 15 pkgs.; Gothenburg, 2 cs.; Peru, 1 pkg.; Venezuela, 9 cs.

STATIONERY, cases, to London, 51; British West Indies, 9; Central America, 24; Cuba, 7; British Australasia, 33; Liverpool, 102; Hayti, 9; Argentine Republic, 3; Colombia, 21; Uruguay, 2; Havre, 4; Tasmania, 2; Venezuela, 12; Brazil, 7; Bremen, 3; China, 1; Christiania, 1; Danish West Indies, 2; Dutch West Indies, 4; Mexico, 2; Peru, 3; Porto Rico, 2; San Domingo, 7.

CARDS, cases, to Bremen, 1; Hamburg, 10; Venezuela, 2.

WALL PAPER, cases to British West Indies, 1; Mexico, 20.

CARDBOARD, bundles, to Venezuela, 1.

AGGREGATES AND VALUES.

Paper, reams.....	—	—
Paper, pkgs.....	2,846	$17,881
Paper, cases.....	73	1,426
Books, cases.....	117	8,490
Stationery, cases.....	312	10,479
Rosin, bbls.....	3,746	11,374
Totals.....	7,094	$49,650

Exports General Merchandise for the week ended August 7, 1894..... $7,738,762

THE BEST AND CHEAPEST

GRATE BAR FOR ANY KIND OF FUEL.

W. W. TUPPER & CO.,
39-41 Cortlandt St., NEW YORK.

"STAR" Ventilator

Storm-Proof—Largest Area.
MERCHANT & CO., (INC.)
PHILADELPHIA. CHICAGO. NEW YORK.

NEW HAVEN MFG. CO.,

New Haven, Conn.,
Manufacturers of
Lathes, Planers, Drills, Slotters, ETC.

WILL. MUNDS,
Dresden, Germany.
—CENTRAL OFFICE FOR THE SALE OF—
Sulphite, Sulphate and Soda
PULPS.
Eighteen Mills for Chemical Wood Pulp represented
Bleached and Unbleached; supplied in all qualities and by all processes.
Specialty: The Strongest Fibred Qualities, (MITSCHERLICH PROCESS.)
STRAW PULP—FIRST-CLASS BLEACHED.

TRAIN, SMITH & CO.,
IMPORTERS OF AND DEALERS IN
—ALL DESCRIPTIONS OF—
Paper Makers' Supplies,
24 FEDERAL STREET, BOSTON,
BRANCH OFFICES: 36 BEEKMAN STREET, NEW YORK. 21 ST. MARY AXE, E. C., LONDON. EDMUND ST. CHAMBERS, LIVERPOOL.

WM. J. CORBETT & CO.,
WHOLESALE DEALERS IN AND PACKERS OF
Woolen Rags and Paper Makers' Supplies,
86, 88 & 90 COVE ST., BOSTON, MASS.
WOOLEN RAGS GRADED IN COLORS AND QUALITY.
OUR SPECIALTIES: "EXCELSIOR" AND "STAR" PACKINGS

ESTABLISHED 1855.
DARMSTADT & SCOTT,
—IMPORTERS AND PACKERS OF—
PAPER STOCK.
Offices: 257 Front Street. Packing House: 312 Water Street, New York.
SPECIAL ATTENTION CALLED TO OUR OWN PACKING.

F. BREDT & CO.,
No. 194 Fulton Street, SOLE AGENTS FOR New York City, U. S. A.
JOSEPH PORRITT & SONS'
TRADE MARK. ENGLISH FELTINGS.
ALSO IMPORTERS AND DEALERS IN
MARINE BLUE (Aniline) for News Paper Mills,
Jacketing, Roll Cloth, Double Extra Canvas, Ultramarine Blue.

GRIFFIN & LITTLE, PAPER MILL CHEMISTS,
Office and Laboratory: 103 Milk Street, Boston.
EXPERTS IN THE SULPHITE PROCESS AND ALL CHEMICAL MATTERS PERTAINING TO THE MANUFACTURE OF PULP AND PAPER.

TRUE & McCLELLAND,
(LATE E. A. TRUE & CO.
PACKERS AND IMPORTERS OF
Paper Stock and Wastes,
OFFICE: 64 FEDERAL STREET, BOSTON.
Foreign Packing Branches: 19 Corporation St., Manchester; 97 Park St., Liverpool.

A. WERTHEIM & CO.,
HAMBURG, GERMANY,
Exporters of all Grades of Sulphite and Soda Pulps.
SIGMUND GOLDMAN, Agent for the United States and Canada,
BENNETT BUILDING, 99 NASSAU STREET, NEW YORK.

DE CLERCQ-MESTDAGH & CO.,
Aerseele n/Deynze, Belgium,
PACKERS AND DEALERS IN ALL KINDS OF
BELGIAN AND FRENCH PAPER STOCK,
Cotton and Linen Rags, Baggings, Ropes, Etc.
ALL CAREFULLY SORTED AND PREPARED.

THE ROBERT AITCHISON PERFORATED METAL CO. CHICAGO, ILL.
PERFORATED BRASS.
ALL STANDARD SIZES.

AMERICAN STRAW BOARD CO.
ORGANIZED JULY 1, 1889. CAPITAL, $6,000,000.
Manufacturers of Straw Boards, Pulp Lined Boards, Lined Straw Boards, Combination Boards, Binders' Boards,
"LIGNISTRA." Friction Boards, Building Board, Plain Board, Tarred Board, Waterproof Boards, Barrel Layers, Peach Baskets, Egg Cases and Fillers.
General Office, PULLMAN BUILDING, CHICAGO.
AGENCIES: New York, 102, 104, 106 Wooster St. Boston, 46 Federal St. Philadelphia, 121-127 N. Fourth St. Cincinnati, 101-103 Walnut St. Chicago, 152-153 Michigan Ave.

CASTLE & GOTTHEIL,
—IMPORTERS OF—
Sulphite and Soda Pulps,
LINEN AND COTTON RAGS,
JUTE STOCKS, SIZING, &c.
140 NASSAU STREET, NEW YORK.

The Paper Trade Journal.

DEVOTED EXCLUSIVELY TO
THE INTERESTS OF
The American Paper Trade.

Weekly, $4.00 per Annum.

Single Copies, - - - 10 Cents.

Subscription per annum and postage for Great Britain..... £1
Subscription and postage for France, per annum..... 25 francs
Subscription and postage for Germany, per annum..... 20 reichsmark
Payment for subscriptions or advertising may be made by express money order, draft, post office order or registered letter.

LOCKWOOD PRESS PUBLICATIONS.

PER YEAR.

Paper Trade Journal, Every Saturday, $4.00
American Stationer, " Thursday, 2.00
American Bookmaker, Monthly, . . . 2.00
American Mail and Export Journal, separate editions, English and Spanish (EL CORREO AMERICANO Y DIARIO DE EXPORTACIÓN), Monthly, . . . 3.00
Lockwood's Directory of the Paper, Stationery and Allied Trades, Annually, ... 2.00

All Pioneer Publications.

HOWARD LOCKWOOD & CO.,
Publishers,
128 and 128 Duane Street, New York.

WILLIAM PINKNEY HAMILTON, Managing Partner.

Telephone—151 Franklin.
Cable Address—Catchow, New York.

BRANCH OFFICES:
Western Office—R. B. DUVALL, General Manager, 56-58 LA SALLE STREET, CHICAGO, Ill.
Boston Office—A. L. DELESDERNIER, General Manager, 67 FEDERAL STREET, BOSTON, Mass.

NEW YORK: SATURDAY, AUGUST 11, 1894.

IN another column of this issue of THE PAPER TRADE JOURNAL will be found a consideration of mineral fillers for paper, extracted from "The Chemistry of Paper Making." The complete work will ere long be ready for delivery and the trade will find it to be a valuable authority on subjects which have never been so thoroughly presented as in this text book.

THE new president of the American Paper Manufacturers' Association has secured forty new members for that organization up to this date. This indicates an active administration likely to further the work which the association can and ought to perform. Such efforts should not be left to the executive head alone, but should be aided by everyone who has the American paper making industry at heart. We therefore urge the trade to make every exertion to increase the membership of that body, which can be made in every way representative of their interests.

No settlement of the tariff question has yet been made. This delay causes great tension in business and defers that industrial recovery so necessary to general commercial activity. Should the matter be at once decided, no matter on what lines, there would be some measure of relief according to the degree to which American interests are sacrificed, and if the conclusion should be that no change from the existing law shall be made, there would be, we feel assured, such an instant revival in trade that money now withheld from industrial enterprises would flow freely through all of the channels of business. With our factories actively employed and running on full time there would be an all round demand for the products of our mills and farms. The purchasing power of the working people being restored, the return to confidence would be so marked that it would cause wonder that the effort to alter the condition of affairs had ever been exerted.

WE have before us the summary of exports and imports of the United States for the fiscal year ended June 30, as prepared by the Bureau of Statistics of the Treasury Department. The value of the imports of merchandise is less by $211,405,771 than for the year preceding. This shows that the uncertainty of tariff legislation has operated very unfavorably upon our import trade. On the other hand, our exports of merchandise have increased this year, as compared with last, to the extent of $38,177,156, and of this amount the gain in domestic manufactured goods is $25,887,429. The exports of American paper and paper goods have increased $361,332, and of stationery (not including paper) the values have increased $86,089. Thus it will be seen that notwithstanding the much abused McKinley tariff our shipments abroad have enlarged, while the imports have fallen off, the latter circumstance of course being largely due to the cause before cited. It is gratifying to note that the foreign demand for paper and stationery of American manufacture is steadily increasing.

THE leaven of greenbackism seems yet to be fermenting in the minds of many good people, who remember with fatal clearness the apparent ease with which the Government ground out money in war times—converting, in their fervid imagination, pieces of blank paper into things of intrinsic value by simply putting the Government imprint on them. Ever since then they have believed that the chief function of Government is to make money, and that in sufficient quantities to give every man, woman and child all that they may possibly want. The call for an increase of the currency, which comes loudly and clamorously from some parts of the country, has its roots in the old greenback theory of money, which held that business stagnation results from an insufficient circulating medium, and that an increase in its volume would quicken trade and stimulate dormant industrial energies. Clearly then, they argued, it was the duty of the Government to add to the currency whenever there seemed too little to go around.

THE first thing that we have to remember is that money has no power in itself to do anything. It is simply co-operative in its service, an intermediary between buyer and seller. One may carry a dollar in his pocket until the crack of doom and never be a cent richer; if, however, he uses the dollar as a co-operative agent in supplying a want, or in the purchase of that which he sees an opportunity to exchange for something of greater value, he is the richer, in the first instance in comfort, in the second in purse. This might be exemplified in many ways, but, briefly stated, the function of money is to facilitate exchanges and effect settlements, and only thereby to stimulate trade and create business. This will be the more clearly apprehended when we remember that the greater part of the volume of business is transacted with checks, drafts, bills of exchange and other mercantile paper, and that outside of the retail trade very little actual money passes from hand to hand. Business is created by demand alone, which operates to stimulate exchanges.

THE present condition of affairs does not seem to arise from a too small amount of currency, but from the timidity of money or its holders. This is amply evidenced by the overloaded condition of the banks. Indeed the present situation may be regarded as abnormal—a plethora of money and no use for it. It is from this feature of the depression that many prophesy a quick and energetic revival of business when once the tide has turned. Capital—or money—will not willingly remain idle for any length of time. It is ever alert for advantages and the gain which follows its exchange for products or its employment in productive industries. Here again demand appears as the energizing agent. If money does not stimulate, but expedites and facilitates trade, there must necessarily be a cause which when operative will enable money to perform these functions profitably. We have no further to look for it than in the simple word demand.

WHEN the period of disturbance set in a year or more ago demand fell off rapidly, and a decline of prices immediately followed. The buying power of the people was severely restricted, production was curtailed, and as a consequence money was withdrawn from active business and deposited in banks to await better times. Economy has been the rule for months, but there must soon come a time when necessity will compel free buying, and the thin end of the wedge thus entered, demand for commodities will spring up, prices will advance, money will come forth from hiding and the wheels of commercial prosperity will once more begin to revolve. It will then be seen that we have enough money for all reasonable demands. What the country needs and must have in the near future is more elasticity in our financial system, a more facile method of getting money out among the people who need its aid, and away from commercial centres, where it too often lies unserviceable. Every year witnesses the spectacle of millions of dollars sent West to assist in moving the crops, and this money in a few months finds its way again to the centres of trade, there to await the repetition of the movement, leaving the people of the agricultural districts clamorous and vindictive regarding a condition of affairs which, under the present system, is as unremediable as it is inevitable.

Watermarks.

BY DANDY.

These are confessedly dull times, and yet there is light ahead. Business is going to be better, and, convinced of that, some manufacturers are adding to their equipment so that when the demand does come they will be able to care for it. That is a substantial way to look at it, and if there was the same stimulus given to other lines general trade would soon revive.

It is the man who looks far enough ahead to see what is going to happen who generally has the long pole when the persimmons are ripe.

The secret service officers of the Government have developed a new branch of the paper business. Hidden in a box, which was buried in Connecticut soil, they found a quantity of distinctive paper, upon which some counterfeiters proposed to print $10 bills.

The bills will not be printed, for the reason that the Government has confiscated both the papers and the counterfeiters. The paper does not look like an American production, and is probably from across the water. It isn't "bang up" paper, anyway; but if it had been printed up it would probably have had a large circulation.

Two New York paper merchants were listening to a peripatetic band assault the air with alleged music. After bearing it for some time one said: "Why, that's the 'Dead March' from 'Saul.'" "Yes, that is one of its names," said his colleague, "and it's other name is the 'Philadelphia Quickstep.'"

The Schenectady *Evening Star* recently spoke as follows: "The Hon. George West's manly beauty is like the dawning of love's young dream. He is a beauteous beauty from the spot where beauties grow, and his place is not on the committee, as the *Sun* suggests, but rather in the first row of competitors in the great pulchritude contest. Hirsute adornment not considered, the Hon. George West, of Ballston Spa, is easily the handsomest man in the Western World."

Now, Uncle George, what have you to say? Have you "got it in" for that newspaper man?

The seed planted at the last meeting of the American Paper Manufacturers' Association has already sprouted and the full fruit will be along a little later. A number of applications for membership, some forty or fifty, are now on file, and that is only the beginning.

There are not many failures among the paper mills, but fires appear to be rather plentiful. Burning up is a very thorough and effective way of shutting down a mill, but it causes wry faces among the insurance men. Paper makers don't make *wry* faces—according to that way of spelling.

Some very curious excuses are given for shutting down mills, but one given by an Eastern manufacturer a few days ago is away ahead of the procession. "You see," he said, "the mill buggy looked very bad, and in order to get time to paint it we just shut the mill down."

People who sell wall paper and want to get the trust rebates have got to swear that they have made all their purchases of the combination. Great scheme, isn't it? and has such a sweet odor to it.

Trade Talks.

William H. Parsons, of William H. Parsons & Co. — My trip to China and Japan was very beneficial to me. I left New York on January 8, went to Montreal, thence to Vancouver by the Canadian Pacific Railway. From Vancouver I went to Sydney by way of the Hawaiian Islands, touching also at the Fiji Islands. The voyage lasted twenty-eight days, and, with the exception of three days, the sea was calm and the weather warm and comfortable. The trip across the continent by way of the Canadian Pacific is very interesting, especially where the road enters the mountains. I might say that the harbor of Sydney is one of the finest in the world. It is said that it has 1,600 miles of water front if you follow the inlets, navigable streams, &c. Sydney is a fine city; it reminds me very much of Boston. Off and on I was in Sydney about a month, and therefore had an opportunity of seeing all that was worth seeing there. I went from Sydney to Melbourne, which is a fine city with wide streets, all laid out with a good deal of regularity. Of course Australia is suffering much from the financial troubles of a year ago, and although the banks have reconstructed and recovered somewhat, the country itself yet feels the effects distinctly. The opportunities which I had of studying Australasia led to the conviction that it is an agricultural country, and that its prosperity will depend upon the products of the soil. The colony of Victoria has a protective tariff, and there is some little manufacturing there, but in view of the fact that there are only about 4,500,000 of people in Australia, New Zealand and Tasmania combined, it seems to me that it would be better for the people to turn their attention to agricultural and pastoral interests rather than to manufactures. Labor is high and scarce. From Melbourne I went to Tasmania, and thence to New Zealand. The latter is a very attractive country; the South Island has well cultivated soil, except the mountains, which are very beautiful. I went from the South Island to the hot lake district where I saw the Maoris, the original inhabitants of the island. They are a fine race of people. I saw bubbling up out of the soil springs the water of which was so hot that the Maoris cooked their food in it. Within the past two or three years New Zealand has developed a large trade with England in frozen meats, mutton and beef. A large amount of money has gone into that country in payment for these products. New Zealand is well situated to carry on this trade, as there is no portion of it more than 80 miles from the sea, and the freezing establishments are located at various points along the coast. From New Zealand I returned to Sydney and went to Brisbane, a distance of 800 or 900 miles by rail through a beautiful country mainly devoted to sheep and cattle raising. Brisbane is the seat of government of Queensland, and is a city of about 60,000 inhabitants. I found that a considerable portion of the news paper used in Australia and New Zealand is supplied from the United States, and if we had shipping facilities equal to those furnished by England a larger market could be found there. The voyage from Sydney to Hong Kong is delightful, as we saw land fifteen out of the eighteen days we were on board. I was in Hong Kong five days. From there I went to Shanghai and took a tour through the Chinese city accompanied by a police officer. The Chinese do not like the foreigners, for which I think the latter are partly to blame. From Shanghai to Nagasaki was my next move and thence to Japan, where I remained about three weeks. I saw a considerable portion of the country. It is disappointing to some extent in scenic attractions, but there is much to interest the visitor. I left Yokohama on my return journey on June 23 and returned to Vancouver, arriving home about three weeks ago. One of the passengers on the steamer from Yokohama was a Japanese. He was the manager of one of the largest manufactories in Japan and came to the United States to purchase paper making machinery.

Changes, Removals and New Firms.

S. G. Clark, printer, Bosworth, Mo., has sold out.

E. A. Pueschel, publisher, Bakersfield, Cal., has sold out.

The *Daily Register*, Newport News, Va., has ceased publication.

Hazel Hall, publisher of the *Despatch*, Fort Scott, Kan., has sold out.

Merrill & McIntire, booksellers, &c., Salem, Mass., have dissolved partnership.

The *Advance* Printing and Publishing Company, Lynchburg, Va., has sold out.

Teele & Williams, dealers in wall paper, Fremont, Neb., have dissolved partnership.

T. J. Sherman & Co., dealers in wall paper, Sherman, Tex., have dissolved partnership.

A. Neupert & Co., wholesale dealers in wall paper, Brooklyn, N. Y., have dissolved partnership.

The Schuylkill Paper Company, Philadelphia, Pa., has been incorporated. Capital stock, $27,000.

John M. B. Morrow, dealer in wall paper, Philadelphia, Pa., has been succeeded by Elder & Norton.

The Greenwood Publishing Company, Greenwood, S. C., has been organized to publish a newspaper. R. B. Wilson is manager.

Charles Cargo, printer and bookbinder, Huntington, W. Va., has sold out to J. G. Downtain & Son.

The Leidy Printing Company, Savannah, Ga., has been succeeded by the New Commercial Printing Company.

G. L. Wilton & Co., booksellers and stationers, West Bay City, Mich., have been succeeded by G. L. Wilton.

Schmidt & Read, stationers, New York city, have dissolved partnership, Carl Schmidt withdrawing from the firm.

John W. Lovell, the well-known publisher, has purchased an interest in *Godey's*, and has been elected secretary-treasurer of the concern, and will have the entire charge of the business department.

The Schuylkill Paper Company, Philadelphia, Pa., has been incorporated. Capital stock, $27,000. Incorporators, John D. King, L. Steward, Pemberton Hollingsworth, Chas. E. Peteum and Alfred S. Miller.

The Metal Rim Tag Company, of New York, has been incorporated to manufacture metal rim tags; capital, $12,000. The directors are Bernhard Baron, of New York; D. V. Moses, of Arverne, N. Y., and Jacob H. Hirsch, of Brooklyn, N. Y.

The *Spirit of '76* Publishing Company, of New York, has been incorporated to publish a monthly magazine devoted to the news and interests of patriotic societies, whose ancestors served in the War for Independence, and the Colonial wars; capital, $4,000, and directors, W. J. Warren, Stephen M. Wright, Franklin Murphy, Louis H. Cornish, Henry Hall, William H. Brearley and Charles W. Haskins.

Failures.

Yerkes, Jones & Co., dealers in wall paper, Philadelphia, Pa., have assigned to Geo. H. Grebe.

The plant of *L'Artiste* Publishing Company, New York city, was sold at sheriff's sale on August 7, the sale realizing about $300.

The schedules of James Affleck, printing ink manufacturer, 4 New Reade street, New York, show liabilities, $9,772; nominal assets, $15,462; actual assets, $2,445.

The interest of the assignees in the ship yard, engine and boiler building plant of Harrison Loring, at City Point, South Boston, will be sold at public auction on Saturday, August 18 at 3 P. M.

Frederick K. Day, receiver of the United Paper Company, has filed his accounts with the clerk of the Supreme Court in the city of New York, and on August 27 will apply to the court for an order of reference to a referee to pass on the same.

Deputy Sheriff Murphy, at Middletown, Ohio, has replevined goods in the hands of Constable Murray belonging to the United Paper Company in favor of the Crystal Paper Company, of Amanda. The property was held under an execution issued in favor of J. D. Crane, a creditor of the United Paper Company. The replevin suit will, it is said, open a big legal fight.

James E. Sims, dealer in wall paper and decorator, 170 Bowery, New York, made an assignment on August 7 to George W. Rumbold, giving a preference to Virginia E. Sims for $1,100. He started in business in 1877, became embarrassed in June, 1890, making an assignment to Mr. Rumbold, but afterward paid the creditors in full, which proved too much for him, it is said, business having been poor for two years past.

Andrew Scott has been appointed receiver of the *Sporting World* Company, which published the *Sporting World* at No. 16 Spruce street, New York, in a suit brought by Hastings & Gleason on behalf of Ruth E. Avery, who holds two unsatisfied judgments against the company for $370. The company was incorporated in 1885 with a capital stock of $5,000. The assets, it was stated, consist of type, material, office fixtures, accounts receivable and the paper, the *Sporting World*.

The creditors of the J. K. Gill Company, stationer, Portland, Ore., which failed recently, held a meeting on Monday at the rooms of the Stationers' Board of Trade, C. T. Dillingham presiding and W. W. Davis being secretary. Mr. Gill was present and made a statement showing liabilities of $129,211, being $110,000 due to banks for borrowed money and $19,211 for merchandise, and assets of $90,249.04, made up of merchandise, $66,348.91; bills and accounts receivable $20,000; other stocks, $200; real estate, $400; store furniture and fixtures, $2,500, and cash, $800.13. Mr. Gill offered 25 cents in six, twelve and eighteen months and the offer was accepted.

In Town.

John A. Hall and C. H. Dobilinski, Lambertville, N. J.; C. G. Weeks, Skaneateles, N. Y.; J. Howard Friend, West Carrollton, Ohio; Thomas Duncan, Hartford, Conn.

Fires.

J. H. Wood, stationer, Brooklyn, Ia., has been damaged by fire; loss, $1,000.

Robinson, Crain & Co., publishers, Brooklyn, Ia., have been damaged by fire; loss, $4,000.

E. P. Scrader, dealer in stationery, &c., Brooklyn, Ia., has been damaged by fire; loss, $4,000.

C. C. Gilleo, publisher of the *Enterprise*, Grand Rapids, Mich., has been damaged by fire; loss, $1,000.

The factory of J. B. Sift, paper box manufacturer, Chicago, Ill., was damaged by fire on August 6.

The Lyndon Paper Mill, belonging to the Columbia Straw Paper Company, at Lyndon, Ill., was destroyed by fire on August 2. Loss, $25,000; insurance, $15,500.

The *Regulator* printing office, Carmi, Ill., owned by W. J. Partridge, was burned on July 31, the fire being started by incendiaries. The insurance is $1,800, which fully covers loss.

A fire in Detroit, Mich., on August 2, which destroyed a freight shed belonging to the Michigan Central Railroad, burned $13,000 worth of paper consigned by the Manufacturers Paper Company to Detroit daily papers.

The paper mill in Brooklyn, N. Y., formerly owned by H. A. Philp & Co. and now run by John Goodenough, was the scene of a blaze last Sunday. The fire was in a pile of stock, which consisted of paper taken from the ruins of the Vernon Brothers' fire on Duane street. The damage was slight.

The four story mill building of the T. New Manufacturing Company, manufacturer of roofing paper, at the foot of East Twentieth street, New York, was burned last Saturday night. The upper stories were filled with raw material and finished product, while on the lower floors was the machinery. The loss is placed at $15,000 to $20,000; insurance, $49,812.

The warehouse of the Nelson Paper Company, Minneapolis, Minn., with about 700 loads of wood belonging to Nelson, Tenny & Co., was burned on August 2, causing a loss of between $5,000 and $6,000. The fire started in the warehouse on Marshall street and Fifth avenue, N. E. The building was filled to the roof with plain and tarred building paper and straw. Before the fire department arrived the flames had enveloped the whole structure, and had taken possession of a large tract of dry mill wood and edgings which was piled along the river bank in the rear of the warehouse. The fire burned fiercely, but was soon under control. The warehouse, an old frame building 50x150 feet, was owned by S. P. Channel, and was worth about $500. The wood was estimated to be worth about $500, and the straw and paper in the warehouse at about $4,000. In addition to this two small frame barns, the personal property of B. F. Nelson, were destroyed. These were valued at about $200 each. There was $4,000 insurance on the stock in the warehouse. The fire is attributed to incendiarism. No one was about the premises when it broke out, and the first man on the ground says that the flames burst out from the inside. A suspicious circumstance was the fact that the box on Second street and Sixth avenue, N. E., was found to be "plugged" up when some one tried to turn in an alarm. The keyhole was filled with glass and earth, hammered in so tightly that it could hardly be removed with a knife.

Mortgages, Etc.

[In the appended list R. signifies a renewal of a pre-existing mortgage; B. S., bill of sale; T. D., trust deed, and Real, a mortgage on real estate.]

EASTERN STATES.

Mortgagor.	*Amount.*
S. W. Huse & Co., Lowell, Mass	$5,400

MIDDLE STATES.

Griffin Ackley, Binghamton, N. Y.	5,000
George Ruck, Jersey City, N. J.	500

WESTERN STATES.

Ed. A. Janssen (Diers & Janssen), San Francisco, Cal.	3,000
S. J. Clarke, Chicago, Ill.	1,554
U. G. Reininger, College Springs, Ia.	114
Foote & Bradbury (*Journal*), Fairfield, Ia. (B. S.)	800
Adrain Cood, Hedrick, Ia.	200
Pepperill Brothers, Concordia, Kan.	879
Pepperill Brothers, Concordia, Kan.	360
J. D. Crouch, Hutchinson, Kan. (B. S.)	330
Harry Higley, Blair, Neb.	300
H. B. Jeffries, Elkhorn, Neb. (B. S.)	750
W. L. Witherow, Milford, Neb.	225
Daniel C. Stearns, Berea, Ohio (R.)	1,200
Whitworth Brothers, Cleveland, Ohio	700
B. F. Wade Company, Toledo, Ohio (R.)	7,500
Ben. C. Irwin & Co., Portland, Ore. (R.)	4,255
A. H. Harris, Palouse, Wash.	—
W. D. Knight Printing Company, Spokane, Wash.	1,650
Paul Malzan (et ux.), Milwaukee, Wis.	250

SOUTHERN STATES.

Eugene Williams, Bucklin, Mo.	325
W. H. Miller, Jr., Kansas City, Mo.	400

LIENS DISCHARGED.

P. M. Diers et al. (Diers & Janssen), San Francisco, Cal.	3,000

Counterfeit Government Paper.

ARREST OF CRIMINALS.

Under the direction of Chief Hazen the Government secret service officers this week caught a very clever gang of counterfeiters, together with all of their tools, plates, presses, &c., the headquarters of the criminals being near Bethel, Conn. Four men were arrested and are now in jail.

The counterfeits were of "greenbacks" and national bank bills, and included in the material was a quantity of bank note paper, some of it plain and some of it "distinctive" paper, and having in it the blue and red silk fibres which are used in Government paper. Some of the paper was in strips the width of a bank note and of the length of four bank notes. The remainder of it was in sheets, and the whole was of poor quality, which is partially accounted for by the fact that to keep it secure the counterfeiters had put it in a box and then buried it in the ground. It had a musty odor and felt damp and soft.

It was at first thought that the paper was hand made, and it was presumed that the counterfeiters had fabricated it themselves, the finding of a spool of red silk thread similar to that used in the paper lending color to this presumption. The paper, however, is not hand made. It is the product of a cylinder machine, as an examination of the sheets shows, and the secret service officers think that it was made in England.

William H. Forsythe, the local "operator" of the secret service, said: "We have cleared up the whole case with the exception of one point, and that is, we do not know who made the paper. We are now investigating that. Of course it is a crime to make the paper, and very nearly as serious a crime as the counterfeiting itself. The counterfeiters at first had only plain paper, and then they were willing to sell the bills at 34 cents on the dollar, but later on they said: 'We will soon have the regular fibre paper, and then there will be no discount on the bills. They will then be worth 100 cents on the dollar.'"

Chief Hazen, talking about the paper, said: "My own impression is that the paper was made in England. The plates are very fine, and when the paper was dipped in coffee it gave it an old appearance, and the bills printed on it would have been exceedingly dangerous."

Personals.

Mr. Friedlander, of Castle & Gottheil is at Schroon Lake.

Leon Gottheil, who has been laid up sick, is again out, and is now in Saratoga recuperating.

Frank W. Wilson, of Osborn & Wilson, is now at the Oceanic, Isles of Shoals, off Portsmouth, N. H., with his family.

John A. Hall, of the Union Mills Manufacturing Company, has gone to Martha's Vineyard for a short stay.

Accidents.

R. L. Rolfe, an employee at the De Pere Mills, De Pere, Wis., had three fingers of his right hand cut off by a circular saw on July 30.

Frank Hyett was quite seriously injured on August 1 at the mill of the St. Joe Valley Paper Company, Elkhart, Ind., by the explosion of a boiler. The force of the explosion, which was caused by clogged pipes, threw him a considerable distance, the escaping steam burning and scarring his arms, body and face. The smoke stack was partially wrecked.

Market Review.

OFFICE OF THE PAPER TRADE JOURNAL, FRIDAY, August 10, 1894.

THE MONEY MARKET.—The stock market was irregular, but most of the moving shares closed at higher figures. Call loans were easy at 1 per cent., but in the time loan market there was a firm undertone. Demands for loans continued as on Wednesday, from both South and West. Rates are 1@2 per cent. for thirty to sixty days, 2½@3 per cent. for ninety days and 3½@4½ per cent. for longer dates. Lenders are becoming more careful about the character of collateral. Commercial paper was moderately active. Rates are quoted as follows: Three per cent. for sixty to ninety day bills receivable, 3¼@3¾ per cent. for four months' commission house names, 4@4½ per cent. for prime and 4½@5¼ for good four to six months' single names. There are notes of the best New York makers in the market, such as the banks have not seen for months past. It is almost needless to say that such are quickly sold, but other paper less favorably known is not in active demand. Some buying for out of town account is reported. The market for foreign exchange was easy at a further reduction in rates equal to a broker's commission. Bills were not in much larger supply, but the demand was very small. Posted rates were $4.88 for sixty days and $4.89 for sight. Actual rates were $4.86¼@4.87¼ for sixty days and $4.87¼@4.88¼ for sight.

THE PAPER TRADE.—There is almost nothing in the way of special feature to report in the paper trade. Jobbers report business as quiet, but manufacturers are doing a relatively better trade. None of the grades have any special advantages over the others, and all manufacturers are keeping product well in hand, and are running machines only in response to orders. Prices do not improve in the slightest, but some makers are unwilling to make concessions, preferring to let orders go rather than have figures forced lower. There is a better feeling abroad, and some mills are even getting ready to enlarge plants, so as to be ready for good trade, which they think will be along a little later.

JUTE BUTTS.—The spot market is yet bare of supplies, and there is nothing doing in shipments. The statistical position as given by Cabot, Ray & Co. is as follows: Imported to the United States 1891, 560,692 bales; 1892, 232,387 bs.; 1893, 331,738 bs. Consumed in the United States 1891, 567,972 bs.; 1892, 222,609 bs.; 1893, 368,336 bs. Stock on hand January 1, 1894, New York and Boston, 6,150 bs. Imported since January 1, 1894, New York and Boston, 134,010 bs.; 1893, 308,751 bs.; 1892, 194,601 bs. Stock, August 1, 1894, New York and Boston, none; 1893, 19,734 bs., and 1892, 97,537 bs. On passage for United States June 26, 1894, and by cable to July 31, 1894, 74,782 bs.; 1893, 31,297 bs.; 1892, 20,583 bs. Visible supply to December 1, 1894, 74,782 bs.; 1893, 51,031 bs.; 1892, 118,120 bs. Consumption since January 1, 1894, 140,160 bs.; 1893, 331,765 bs.; 1892, 130,034 bs. Delivered to consumers past thirty days 4,651 bs.; 1893, 7,535 bs.; 1892, 800 bs. The same circular adds: "Market for the month has been without feature; sales light on spot and nothing in futures. Calcutta market offering (in small lots) at 1 3-16 merchantable quality for shipment. Deliveries to consumers for the month have been to bagging manufacturers 4,312 bs., to paper manufacturers 339 bs. Spot stock, none. Supply to December 1, paper quality, 15,000 bs. Owned by bagging manufacturers, 59,782 bs."

WOOD PULP.—There are no changes to be noted in the Ground Wood market, and both prices and demand are about as they were last week.

WOOD FIBRE.—The call for Fibre has improved somewhat this week and business in Domestic Sulphite has wakened up considerably. Domestic Soda is quoted at 2¼@3½c. for Bleached. Domestic Sulphite is quoted at 1¾@2¾c., as to quality, for Unbleached, and 3½c. for Bleached. Foreign grades are quoted as follows: Unbleached Pine, soda process, 2.60@2.75c.; Bleached, same process, 3½@3.90c.; Unbleached, sulphite process, 2.50@3.25c.; Bleached, do., 4@4½c.; Bleached Straw Pulp, 4@4½c. There were 136 tons of Chemical Fibre imported at this port this week, being 105 tons from Christiania and 31 tons from Rotterdam.

FOREIGN RAGS AND PAPER STOCK.—There has been a better inquiry for rags this week, and low grade Linens have been asked for to some extent. Cottons have been moved in a quiet way, White Cottons having been sold at 2½@3½c., and there has been sale of 100 tons Japanese Blues at a shade better than last week. The quotation on these is now 1½c. Imports at this port for the week aggregated 4,965 bales and 136 tons, being 635 bs. rags, 31 bs. papers, 136 tons chemical fibre and 4,299 bs. manillas. Ports of shipment and quantities are as follow: Antwerp, 20 bs. manillas; Bristol, 136 bs. manillas; Christiania, 105 tons chemical fibre, 180 bs. manillas; Hamburg, 75 bs. rags, 31 bs. papers, 112 bs. manillas; Hull, 812 bs. manillas; Leghorn, 455 bs. rags; Liverpool, 15 bs. rags, 2,782 bs. manillas; Rotterdam, 90 bs. rags, 31 tons chemical fibre and 257 bs. manillas.

DOMESTIC RAGS.—There is a slightly better demand for domestic rags. There have been sales of Whites at 3¼c., Soiled Whites at 2¼c., while 2's range from .90@1¼c. as to quality.

BAGGING, &c.—The market for Gunny Bagging has advanced very materially, and there have been sales this week of 500 tons to arrive at 1.10c., and later sale of 300 tons, fall delivery, at 1.15c.; while the closing quotation by leading importer is 1.20c., although others have only reached 1½c. Bright Burlap is quiet and quoted at 1¼c. Mixed Bagging has been in better call, and there have been sales of 200 tons at .85@1c. Wool Tares are also in better demand and are quoted at 1¼c. Manilla imports for the week aggregated 4,299 bales, being 20 bs. from Antwerp, 136 bs. from Bristol, 180 bs. from Christiania, 112 bs. from Hamburg, 812 bs. from Hull, 2,782 bs. from Liverpool and 257 bs. from Rotterdam.

OLD PAPERS.—There is a moderate trade. We quote: No. 1 Hard White Shavings, 2⅝@2¾c.; No. 1 Soft White do., strictly free from wood, 2.15c.; Soft White do., ordinary, 1⅞@2c., Old Ledgers, 2c.; Solid Printed Books, 1¼c.; Mixed Shavings, No. 1, 1c.; Mixed Shavings, No. 2, ¾c.; Extra No. 1 Manillas, .90c.; No. 1 Manillas, ordinary, .75c.; No. 2 Manillas, .60c.; Light Book Stock, .70c.; Folded News, .40c.; Mixed Papers, .35c.; Commons, .25@.30c.; Straw Clippings, .45c.; Binders' do., .45c.

STRAW.—The demand is only moderate. We quote: No. 1 Long Rye at 60@65c.; No. 2 Long Rye at 50@55c.; Short Rye at 45@50c.; Wheat at 40@45c.; Oat at 50@55c.

ROSINS.—Stocks are rather pressing for sale, and the market is weak in tone. We quote: Common to Good Strained, $1.35@1.40; E, $1.65; F, $1.80; G, $1.90; H, $2; I, $2.25@2.30; K, $2.65@2.75; M, $2.90; N, $3.20; W G, $3.30.

CHEMICALS.—The market is very dull. Under date of July 25 J. P. Brunner & Co. speak of the Liverpool market as follows: "There is only a hand to mouth business passing in chemicals, while at the same time quotations show little change. Soda Ash dull and inactive and for Leblanc makes quotations are quite nominal as follows: Caustic Soda, 48 per cent., £3 15s.@4 per ton; 57 and 58 per cent., £4 10s.@4 15s. per ton, net cash; Carb. Ash, 48 per cent., £3 5s.@3 15s. per ton; 58 per cent., £3 15s.@4 per ton, net cash. Ammonia Ash, 58 per cent. in fair demand at £3 10s.@3 15s. for tierces; 5s. less for bags. Soda Crystals are selling to a moderate extent at £2 12s. 6d.@2 15s. per ton, less 5 per cent. Caustic Soda depressed, and English manufacturers are feeling the foreign competition. Quotations vary considerably according to destination, and the nominal spot range is about: Sixty per cent., £7 10s.@8 per ton; 70 per cent., £8 10s.@9 per ton; 74 per cent., £9 10s.@10 per ton; 76 per cent., £10 10s.@11 per ton, net cash. For parcels under 10 tons, 5s. per ton extra is charged. Bleaching Powder is rather quiet, but quotations are unchanged, ranging from £7 10s.@8 per ton, net cash, for hard wood packages, according to market." On spot Bleaching Powder is in very light demand, the sales made being at 1¼@1.85c. Sal Soda has advanced in price, domestic now being 87½@90c. f. o. b., with foreign unchanged at 80c. Caustic Soda is in moderate demand, but the inquiry for Alkali is somewhat better. During the week there have been sales 50 cks. Bleach at 1¼@1.85c.; 25 tons Soda Ash at 1¼c.; 50 tons 58 per cent. Alkali at 1@1½c.; 25 drums Caustic at 2.72½c.

CHINA CLAY.—Prime grades are getting scarce, and held at fancy prices. For ordinary grades there is not much demand. Consequently stocks are accumulating in store, and nominally quoted at $13 per ton and upward as to grade and quantity.

TWINES.—There is only a moderate business doing. We quote: Sisal Hay Rope, 5@6c.; Sisal Lath Yarn, fine, 9¼c. and medium, 9c.; Jute Lines, 7½c.; Jute Ready, 7@7½c.; New Zealand Hay Rope, 6¼@7¼c.; New Zealand Lath Yarn, fine, 9¼c.; medium, 8¾c. Twines—Hemp, 4½ and 6 B Russia, 12c.; 4½ and 6 A American, 12c.; 4½ and 6 D Jute, 9½c.; 4½ and 6 L Jute, 9c.; Hemp Ball, 18 B C, 17c.; 18 C, 15c., Russian Hemp Hay Rope, 9c.

COAL.—The production of Bituminous coal is increasing in all parts of the country. The uses for Bituminous coal will increase in the fall and winter season, but supply appears to be fully equal to demand, and this it is which keeps the price at a low figure at all points of use and consumption.

EDWIN BUTTERWORTH & CO.,
MANCHESTER ENGLAND,
PACKERS OF ALL KINDS OF
Paper Stock, Cotton Waste and Buffalo Sizing,
Wood Pulp, Moist and Air Dry Pulp,
Soda and Ground Pulp,
83 GUNNY BAGGING, &c.
OFFICE IN NEW YORK:
Vanderbilt Building, No. 132 Nassau Street,
JAMES FIRNIE,
A. S. DEMAREST, } Managers.

WATERBURY
Felts and Jackets,
MANUFACTURED BY
H. WATERBURY & SONS CO.,
ORISKANY, N. Y.
Adapted to *every* grade of paper, from the *finest* to the *coarsest*.
The Largest Manufacturers of Paper Makers' Felts in the World.
Our wet machine or pulp felts are *unequaled* for *durability*.
For WRITING and LEDGER PAPERS We warrant a felt equal to anything imported.

PRICES CURRENT.

NEW YORK MARKET.

Paper Market.

DEALERS' SELLING PRICES.

Ledger and Record	$0.18	@	$0.24
Flat Caps, superfines	14	@	16
Flat Caps, fines	11½	@	13
Flat Caps, engine sized	7½	@	9
Blotting, American	8	@	15
Blotting, English	17	@	....
Book, super sized and calendered	6	@	9
Book, super sized and tinted	6	@	7¼
Book, extra machine finish	5½	@	6
Book, machine finish, low grade	5	@	5½
News, No. 1	4	@	4½
News, rag and wood	3	@	3½
Poster	5	@	7
Hanging, superfine, No. 1	8	@	10
Hanging, superfine, No. 2	6	@	8
Hanging, machine satin	4	@	4½
Hanging, white blank, No. 1	4	@	4½
Hanging, curtain	3½	@	4
Hanging, brown	2½	@	3
Colored papers, double mediums	6½	@	8
Colored papers, glazed medium	7½	@	8½
Colored papers, tobacco	8½	@	9½
Colored papers, tissues, 20×30, ₩ ream	1.10	@	1.35
Tissues, black, 20×30, ₩ ream	1.40	@	1.50
White tissue, 20×30, ₩ ream	85	@	1.00
White tissue, 24×36, ₩ ream	1.30	@	1.50
Manillas, Flour sack, cream	10½	@	....
Manillas, Flour sack, drab	9½	@	11
Manillas, Rope, unbleached No. 1	9½	@	11
Manillas, Rope, unbleached No. 2	7½	@	9
Manillas, No. 1, light weight	6½	@	6¾
Manillas, No. 1, heavy weight	6¼	@	6½
Manillas, No. 2	5	@	6
Manillas, Bogus	2¾	@	3½
Wrapping Parchment	16	@	....
Tissue Manillas, full count, weight and size, 24×36, other sizes in proportion	75	@	80
Hardware, light colored, No. 1	9	@	10
Hardware, No. 1, glazed, tarred	7	@	8
Hardware, No. 1, glazed	4½	@	5
Binders' Boards, ₩ ton, No. 1	70.00	@	90.00
Binders' Boards, ₩ ton, No. 2	40.00	@	50.00
Strawboards, air dried, No. 1, ₩ ton	47.50	@	....
Strawboards, steam dried, No. 1, ₩ ton f. o. b. mill	....	@	94.00
Straw Wrapping, basis, 15×20, 15½ lbs., 20 sheets—			
36×40, from 38 to 42 lbs. ₩ rm	85	@	....
30×40, from 30 to 34 lbs. ₩ rm	....	@	72
24×36, from 24 to 26 lbs. ₩ rm	....	@	60
22×32, from 22 to 26 lbs. ₩ rm	50	@	....
20×30, 21 lbs., ₩ rm	....	@	44
20×30, from 14 to 17 lbs. ₩ rm	36	@	....
16×22, from 12 to 13 lbs. ₩ rm	28	@	....
18×28	....	@	32
15×20, 10 lbs. ₩ rm	17	@	19
15×20, from 7 to 8½ lbs. ₩ rm	17	@	19
14×18	....	@	15
12×16	....	@	13
11×15	....	@	11
Straw Wrapping, ₩ lb., heavy weight	1.75	@	1.85
Straw Wrapping, ₩ lb., light weight	1¾	@	....
Cigarette, Straw Tissue, per case of 100 boxes, 50 books to the box, 200 sheets to the book	21.00	@	30.00
Tea Papers, 16 sheet quires—			
12×18	16	@	20
14×20	22	@	....
Card Middles, ground wood	5½	@	6¼
Card Middles, long fibre wood	8½	@	9
Card Middles, rag and wood	8	@	9
Pulp Lined Boards, single manilla, No. 100 and heavier	42.50	@	....
Pulp Lined Boards, double manilla, No. 100 and heavier	47.50	@	....

Rags, Rope and Bagging.

White Shirt Cuttings, No. 1	5½	@	6
Mill Assorted Whites	3½	@	3¾
Unbleached Muslins	4	@	4¼
City Whites, No. 1	3¼	@	....
New Seconds, light	2¾	@	....
New Seconds, dark	1¾	@	2
No. 2 Whites	¾	@	1.15
Cotton Canvas, No. 1	2½	@	....
Linen Canvas, No. 1	....	@	3
Country Mixed, free of Woolens	60	@	75
Seconds (City)	30	@	50
Colors, ₩ 100 lbs.	30	@	40
Manilla Rope	2	@	2¼
Manilla Rope, tarred	....	@	....
Gunny Bagging, No. 1	....	@	1¼
Mixed Bagging, No. 1	80	@	90
Burlap Bagging, No. 1	....	@	1¼
Kentucky Hemp Bagging	....	@	....
Tar Shakings	1	@	....
Hemp Twine Stock	2½	@	....
Jute Waste	¾	@	1

Shavings and Old Paper.

White Collar Cuttings	3	@	....
White Envelope Cuttings	3¼	@	....
Hard White Shavings, No. 1	2¾	@	3
Soft White Shavings, strictly free from wood	2.15	@	....
Soft White Shavings, ordinary	1⅞	@	2
Mixed Shavings, part white	1	@	1½
Ledger and Writing	2	@	2.10
Solid Stock	....	@	1¼
Book Stock, No. 1 light	....	@	1¼
Old Newspapers	40	@	....
Manillas No. 1	....	@	1.15
Manillas No. 2	80	@	....
Mixed Manillas	60	@	....
Hardwares, No. 1	65	@	....
Mixed Papers	40	@	....
Commons	25	@	30
Binders' Board Cuttings	50	@	....
Strawboard Cuttings	45	@	50

Hamburg Rags, &c.

N S C, New Shirt Cuttings	....	@	6
S P F F F, No. 1 Linens	....	@	5
S P F F F, No. 2 Linens	....	@	4½
S P F, No. 3 Linens	....	@	3
F G, No. 4 Linens	....	@	2¾
F F, No. 5 Linens	2	@	....
Extra Fine Blue Linen, light color	2¼	@	....
L F B, Blue Linens	2½	@	....
C S P F F F, No 1 Cottons	....	@	4
C S P F F, No. 2 Cottons	....	@	3½
C S P F, No. 3 Cottons	2½	@	....
C C C, Colored Cottons	....	@	1
C F X, Low grade Cottons	¾	@	1
Extra Fine Blue Cottons	....	@	1¾

Chemicals, Coloring Materials, &c.

Alkali, 58 ₩ cent	1	@	1.30
Alum, lump	1.65	@	....
Alum, ground	1.75	@	....
Alum, Keystone	1¾	@	¼
Alum, Diamond	....	@	2½
Alum, pearl	2¾	@	2¾
Alum, porous	2¾	@	2¾
Alum, Merrimac porous	2	@	....
Aluminous Cake	....	@	1¼
Anti-Chlorine	....	@	2¾
Bichromate Potash, American	....	@	10
Bleaching Powders, spot	2	@	2¼
Cambridge Ochre	11.25	@	....
Caustic Soda, 60 ₩ cent	2.70	@	2.80
Clay, China, English, ₩ ton	12.50	@	17.00
Clay, China, "Star"	12.50	@	....
Clay, China, "Keystone"	10.75	@	....
Clay, South Carolina, ₩ ton	9.50	@	10.00
Clay, Terra Alba, French, ₩ cwt	1.00	@	1.12½
Clay, Terra Alba, American, No. 1	95	@	1.00
Corn Starch	3	@	3¼
Copperas, American	....	@	80
Extract Logwood	9½	@	....
Mineral Pulp	10.25	@	....
Orange Mineral	....	@	9½
Potato Starch	4½	@	4¾
Prussian Blue, dry	20	@	25
Prussiate Potash, American	....	@	24½
Rosins, common to good strained, ₩ bbl	1.50	@	1.57½
Rosins, E, ₩ bbl	....	@	1.70
Rosins, F, ₩ bbl	1.85	@	....
Rosins, G, ₩ bbl	1.97½	@	....
Rosins, H, ₩ bbl	2.25	@	2.30
Rosins, I, ₩ bbl	2.55	@	....
Rosins, K, ₩ bbl	2.75	@	....
Rosins, M, ₩ bbl	3.00	@	....
Rosins, N, ₩ bbl	3.30	@	....
Rosins, W G, ₩ bbl	....	@	3.35
Sal Soda	1.10	@	....
Soda Ash Caustic, 48 ₩ cent	1.60	@	1.65
Soda Ash, carbonated, 48 ₩ cent	1.57½	@	1.70
Soluble Blue	40	@	55
Spanish Brown	½	@	1
Sugar Lead, white	12	@	....
Sugar Lead, brown	7	@	....
Sulphate of Alumina	....	@	2¼
Sulphuric Acid, 66 ₩ cent	1	@	1¼
Ultramarine, blue	14	@	17½
Venetian Red	1	@	1½
Vitriol, blue	5½	@	5¾
Yellow Ochre Rochelle	1.35	@	1.50

Wants and For Sale.

Twenty-five words or less, one dollar each insertion. Over twenty-five words, four cents a word each insertion, up to eighty words. Cash should accompany order.

Over eighty words, or displayed advertising, will be charged for by the inch, according to our regular schedule of rates.

Answers can come in our care and will be promptly forwarded without extra charge.

WANTED—GOOD PAPER MAKER TO BUY new mill in New York State; can get possession with little money. I. S. DILLINGHAM, 67 Federal street, Boston.

WANTED—A PAPER MILLWRIGHT. WELLESLEY PAPER MILLS, 157 West Sixth street, Boston, Mass.

WANTED—SITUATION AS SUPERINTENDent or foreman by practical paper maker; well up in all grades manillas; twenty years' experience; first-class references. R. S., care Journal.

SITUATIONS WANTED BY FIRST-CLASS superintendents, machine tenders and engineers; worked on all grades of paper; both slow and fast running machines; can furnish best references if required. Apply to EAGLE LODGE No. 1, Brotherhood of Paper Makers, Box 672, Holyoke, Mass.

WANTED—FOR SOUTH AMERICAN MILL one millwright to put up, repair and work paper machinery; also one paper maker on cylinder machines, principally wrapping, book and news. Only thoroughly competent and temperate men need apply to F. G. SEGUI, P. O. Box 1898, New York City.

SITUATION WANTED,

By young married man, as boss in color department; understands mixing colors for fine colored, white plated and chromo papers, enameled and glazed, ivories and satins for lithograph, bristols, boxboards and wedding cards; can give good reference. Apply to COLOR MIXER,
Post Office Box 818, Holyoke, Mass.

TO RENT—A FRONT ROOM, CONTAINING about 550 square feet of floor space, first loft, in building occupied by The Lockwood Press, on the southwest corner of Dunne and Church Streets. Apply to HOWARD LOCKWOOD & CO., on the premises.

FOR SALE, CHEAP—ONE FOURDRINIER machine, 62 inch dryer, 68 inch wet part. Apply B. D. & CO., 75 Dunne Street, New York.

FOR SALE.

Six 48 inch copper dryers, 28 inches diameter, with frames.
Three 48 inch Knight iron dryers, 14 inches, with frames.
Two stacks calendars, 48 inch face, of four rolls each; also frames and four extra rolls.
One 48 inch Gavit cutter.
One each first and second press rolls.
Two cylinder molds.
Four upright reels.
One Roy 48 inch roll grinder.
Also small rolls and pulleys.
Will sell cheap in parts or whole.
NIXON PAPER COMPANY, Richmond, Ind.

FOR SALE.

A set of six 86 inch revolving reels, new, our make, with heavy frames, gears, tension wheels, endwise adjustment, driven by weighted friction, a power rotating attachment and a reel turning device.
THE BLACK & CLAWSON CO.,
Hamilton, Ohio.

FOR SALE.

Four 1,000 pound Umpherston Beating Engines, complete, with patent copper washers, sand traps, &c. Engines in first-class condition and now running, but to be taken out to make room for other machinery. Address UMPHERSTON,
care of Paper Trade Journal.

A FINE OPPORTUNITY

TO GO INTO BUSINESS.

To a company that understand the coating business an offer will be made to furnish a fully equipped plant, ample room with plenty of power. Well situated for future business. Will either lease plant or take an interest in the business. Parties answering advertisement must be in position to furnish all necessary capital to buy stock and carry accounts.
Address A. B. C., care of Journal Office.

TO LEASE.

The Hanmer & Forbes Company's Manilla Mill.

BURNSIDE, Conn., April 10, 1894. C. F. HANMER, Secretary.

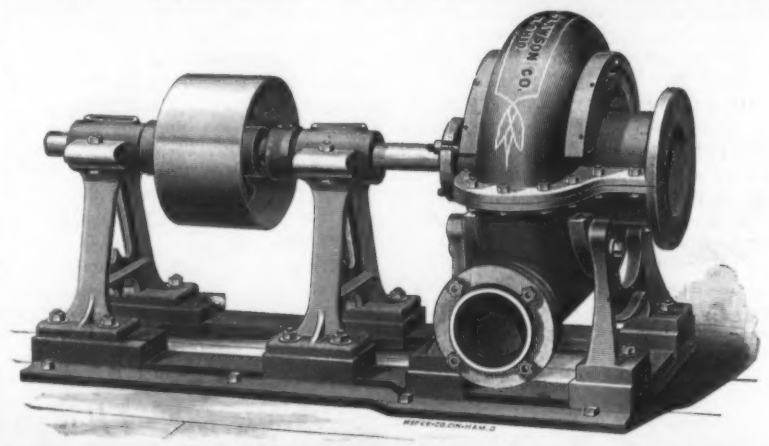
NOTICE.

My attention having been called to the fact that certain parties are infringing certain Letters Patent granted to me, to wit: No. 212,866, dated March 4, 1879, covering a new form of carpet lining, and No. 235,698, dated December 21, 1880, covering the method of and apparatus for making the same, this is to notify all such persons, whether manufacturers or dealers, that any infringement of either of said patents will be prosecuted to the full extent of the law. MOSES NEWTON, Patentee.

PAPER MILL MACHINERY.

One 84 inch Fourdrinier part to paper machine complete, with Gould screen.
One 74 inch Fourdrinier machine complete, Gould screen; gun metal press rolls, 15x75 inches; eight iron dryers, 36x72 inches; stack of nine chilled rolls, 72 inch face; upright reel and cone pulley cutter; Bess slitters.
One Gould screen, eight plates, 10x36 inches.
One Gould screen, eight plates, 12x40 inches.
One Barber's suction.
One 70 inch machine complete, Gould screen, Fourdrinier wire, 70x33 inches; first and second presses; eight iron dryers, 36x65¼ inches; stack five chilled rolls, four 12 inches, one 10x64 inches face; upright reel, slitter and winder.
Two new 1,000 pound Holyoke Machine Co. beaters, wood tubs.
One 1,000 pound iron tub beater.
Six beating engines, 36 inch roll, iron tubs.
One 1,200 pound Horne patent engine, new.
One rotary, 7x20, double riveted, 9-16 inch shell.
Three Scott & Roberts hydraulic pulp grinders.
Three Jordan engines.
Two rag cutters and duster.
Four iron dryers, 28x72 inches.
Send for catalogue of machinery, steam engines and boilers.
1,000 feet shafting, 2 to 6 inches diameter; 500 feet belting, 5 to 48 inches wide.
Parties wanting tools, stock or machinery used in a paper or pulp mill can find it here at a bargain.
F. H. DAVIS & CO., Exchange B'd'g, Boston, Mass.

THE BLACK & CLAWSON CO., MANUFACTURERS OF Paper Mill Machinery,



FOURDRINIER,
HARPER IMPROVED FOURDRINIER AND CYLINDER MACHINERY.
JORDAN ENGINES.
Jordan Engines Refilled.
Screens, Calenders, Rag Cutters, Cylinder Molds, Deckel Straps, Paper Cutters, Screen Plates, Dandy Rolls, Stuff Box Trucks, Iron and Brass Castings.
REVOLVING REELS AND STACK REELS.
FOR PARTICULARS ADDRESS
THE BLACK & CLAWSON CO., Hamilton, Ohio.

WE MAKE THE ONLY PERFECT DRYER.

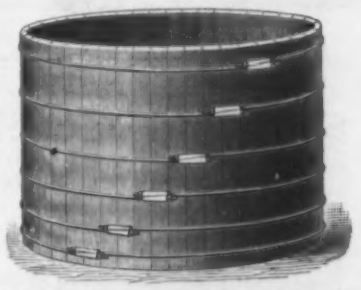
MEDAL AWARDED AT WORLD'S FAIR FOR OUR SEAMLESS DRYER.

—THE—
Cedar Point Foundry,
PORT HENRY, N. Y.
WOOD PULP GRINDERS,
WET MACHINES,
Jeffers Suction Screen.
Made in three sizes: Eight, Nine and Ten Plates.
☞ SEND FOR BLUE PRINTS.

F. M. SPAULDING
CONTRACTS FOR
News and Book Paper in Quantity.
40 State Street, Boston, Mass.
506 Inter-Ocean Building, Chicago, Ill.
News Building, Indianapolis, Ind.

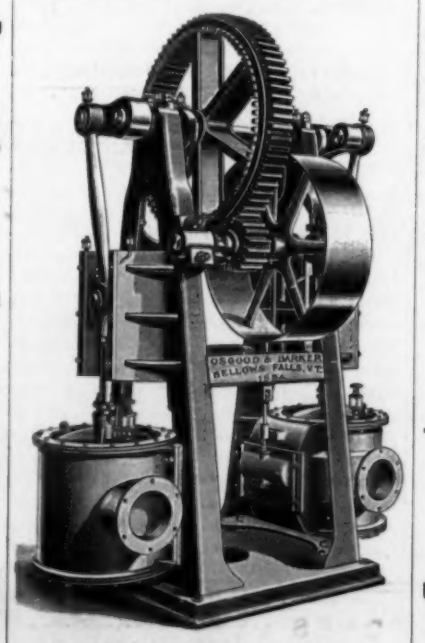
JUTE AND LINEN Paper Stock.
J. & W. SMITH,
DUNDEE, Scotland,
Packers and Shippers of
Clean Jute Threads, Clean Jute Ropes, Gunny Bagging, Manilla Ropes, Bleached Linen Cuttings and Bleached Linen Threads.
ENGINE CLEANING WASTES,
Wadding Wastes,
Colored Jute Wastes. Bleached Jute Wastes,
Felting Wastes and Carded Jute Tows.
OFFICES:
CALCUTTA BUILDINGS.
WORKS:
COMMERCIAL COURT.
WAREHOUSES:
EXCHANGE STREET.
DUNDEE, Scotland.

ESTABLISHED 1840.
GEO. J. BURKHARDT'S SONS'
Cedar Tank Factory,
2831 TO 2839 NORTH BROAD ST.,
Philadelphia.



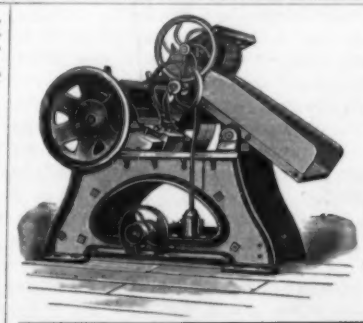
PRESSES.
Hand Power. Steam Power. Knuckle Joint. All Kinds. For Baling and Packing purposes. Illustrated Catalogue.
RYTHER MFG. CO., Watertown, N. Y., U. S. A.

FOR SALE—A SECOND-HAND COPY OF HOFmann's Treatise on Paper Making in good condition for sale cheap. For further particulars address URGENT, care Paper Trade Journal.



VACUUM PUMP.
Weight, Four Tons.
MANUFACTURED BY
OSGOOD & BARKER,
Bellows Falls, Vt.,
MANUFACTURERS OF
Sulphar Burners,
Acid Pumps,
Barkers,
Chippers,
FOR SULPHITE PLANTS.
Fourdrinier and Cylinder Paper Machines,
With one, two, three or four stacks of dryers.
Upright Reels, with two or three Drums,
Reel Stacks and Revolving Reels,
Rewinding and Slitting Machines,
Calender Buffing Machines
For buffing ends of the rolls.
Ground Wood Pulp Machines,
Wet Machines.
Pulp and Paper Machinery
For all kinds of Paper.
WRITE FOR DESCRIPTIONS AND PRICES.

WOOLWORTH & GRAHAM,
COMMISSION
Paper Warehouse.
OFFICIAL EXPORT AGENTS
—FOR—
American Paper Manufacturers.
IMPORTERS OF
Paper Makers' Materials.
OFFICE, 440 Pearl St. | WAREHOUSE, 38 Rose St.
NEW YORK.



CLARK & SPENCER,
Successors to E. P. TANNER'S
FOUNDRY AND MACHINE WORKS,
LEE, MASS.,
MANUFACTURERS OF
New and Improved Spiral Knife Rag Cutters,
Cylinder Paper Machines, Rag Engines, Paper Cutters, Super and Machine and Chilled Iron and Paper Roll Calenders, Stuff and Fan Pumps, Shafting, Pulleys, Gearing and Paper Mill Machinery generally.

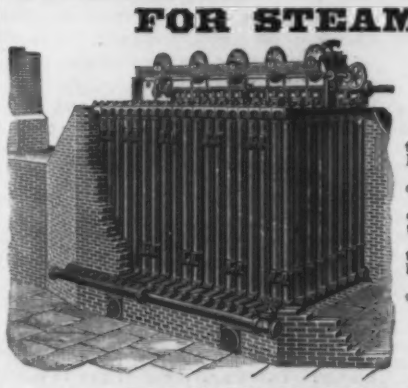
DO YOU WANT A . .
RAG CUTTER,
TO CUT ROPE, JUTE BUTTS, BAGGING, OR ROOFING PAPER STOCK?
—IF SO, WRITE TO—
TAYLOR, STILES & CO.,
RIEGELSVILLE, N. J.

MILL COGS

ON SHORTEST POSSIBLE NOTICE.
I make Cogs with blank head to be spaced and dressed after being driven; but make A SPECIALTY OF "READY DRESSED" cogs, which are ready to run the moment driven and keyed.
REMEMBER: I make ALL KINDS of Mill Cogs and have special facilities which will be of great service to you. WRITE AT ONCE for circular and instruction sheets, FREE.
N. P. BOWSHER, South Bend, Ind.
VISIT ME AT WORLD'S FAIR, Space 219, Column E E 4, AGRICULTURAL ANNEX.

The Curtis Patent Return Steam Trap
will return all condensation back to boiler, and will operate equally well in connection with reduced pressure or exhaust steam.
Its general use during the past 10 years is best proof of its superior qualities.
Manufactured by the
D'ESTE & SEELEY CO., 29 to 33 Haverhill St., Boston, Mass.
NEW YORK: 109 Liberty St.
CHICAGO: 216 Lake St.

GREEN'S PATENT FUEL ECONOMIZER
FOR STEAM BOILERS.

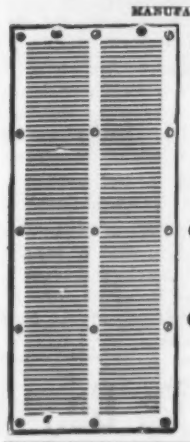


ADVANTAGES:
High temperature of feed water, in many cases up to 209 degrees, thereby effecting a GREAT SAVING IN COAL.
Increased heating surface, thereby increasing capacity of the boilers.
A large volume of water always in reserve at the evaporation point, ready for immediate delivery to the boilers.
Acting as an efficient water purifier and keeping the heating surface of the boilers clean, the result being FUEL SAVED.
Can be applied to ANY TYPE of boilers without stoppage of works.
Only Medal Awarded for Flue Heater at the Columbian Exposition.
SOLE MANUFACTURERS IN THE UNITED STATES,
THE FUEL ECONOMIZER CO.
OF
MATTEAWAN, N. Y.

JUDSON & WILLIAMS,

HOLYOKE, MASS.,

MANUFACTURERS OF



SCREEN PLATES

—OF—

BRASS

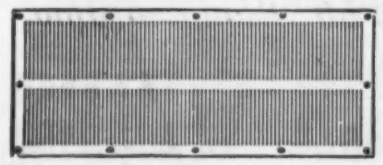
—OR—

CAST METAL.

REPAIRING

OLD SCREEN PLATES

A SPECIALTY.



OLD PLATES RENEWED.

World's Fair

HIGHEST AWARD

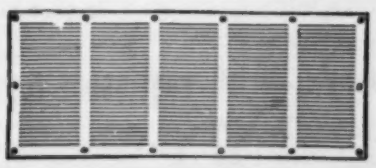
TO

SCREEN PLATES of SPECIAL BRASS,

MADE BY THE

Western Screen Plate Works,

545 Eldorado St., APPLETON, WIS.



METAL SKYLIGHTS

Absolutely no leakage from any source; no dripping or sweating; fire-proof; ventilating.

THE CLOVER LEAF

VENTILATOR

FOR MILLS, FACTORIES AND DYE HOUSES.

Made of galvanized iron or copper. Strong upward draft; exhausts foul air, odors, gases, steam, etc. Perfectly storm-proof. Send for illustrated circular.

E. VAN NOORDEN & CO.,

383 Harrison Ave., BOSTON, Mass.

THE MORRISON & HERRON TESTING SYSTEM.

THE MORRISON & HERRON IMPROVED PAPER TESTING MACHINES.

Three Different Machines

—FOR—

Strength, Thickness and Weight.

A NEW PRINCIPLE APPLIED IN TESTING PAPER.

Thickness shown to the sixteen-thousandth part of an inch.

Used in the GOVERNMENT PRINTING OFFICE and the DEPARTMENTS at Washington.

Price, complete,	$150.00
Or Strength Indicator,	75.00
Thickness Gauge,	75.00
Paper Scale,	20.00

ADDRESS ALL ORDERS TO

HOWARD L. MORRISON,

1009 Pa. Ave., N. W., Washington, D. C.

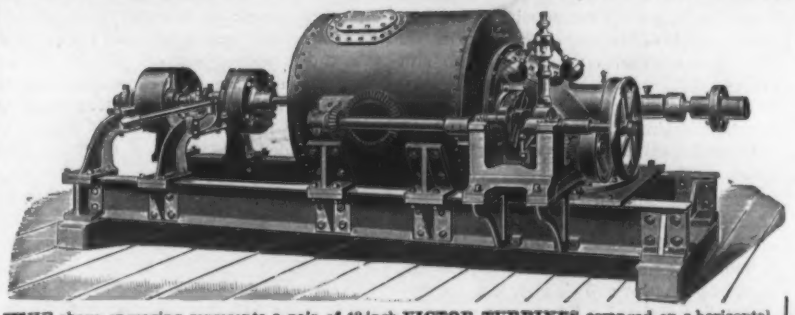
CAUTION.

All persons are liable to prosecution who make buy or use Paper Testers that confine and break paper within its edges, as my Patents cover that method.

THE VICTOR TURBINE.

UPRIGHT or HORIZONTAL.

In use in a large number of best Paper and Pulp Mills in this and other Countries.



THE above engraving represents a pair of 12 inch **VICTOR TURBINES** arranged on a horizontal shaft, with Cast Iron Flume, Draft Tubes, End Bearings for Shaft, and Driving Pulleys complete, all mounted upon a substantial cast iron bed plate. The entire arrangement is very complete and strictly first class in every particular. We are now prepared to furnish Victor Turbines, either single or in pairs, on horizontal shafts, and where the situation admits of their use we recommend them.

CYLINDER OR REGISTER **GATE.**

INSURING HIGHEST PERCENTAGE OF USEFUL EFFECT AT

FULL AND PARTIAL GATE.

TESTS IN HOLYOKE FLUME.

SIZE WHEEL.	HEAD IN FEET.	HORSE POWER.	PER CENT. OF USEFUL EFFECT
15 inch	18.06	30.17	.8982
17½ inch	17.96	36.35	.9030
20 inch	18.21	45.00	.8582
25 inch	17.90	68.62	.8584
30 inch	11.65	82.54	.8676
35 inch	17.29	133.19	.8497
40 inch	16.49	148.98	.8358
48 inch	15.51	179.29	.8302

Such results, together with its nicely working gate and simple, strong and durable construction, should favorably commend it to the attention of all discriminating purchasers.

THESE WHEELS ARE OF VERY SUPERIOR WORKMANSHIP AND FINISH.

THE VICTOR WHEEL is particularly adapted to setting on **HORIZONTAL SHAFT,** DISPENSING ENTIRELY WITH GEARS.

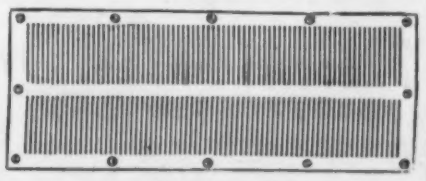
STATE YOUR REQUIREMENTS AND SEND FOR CATALOGUE TO

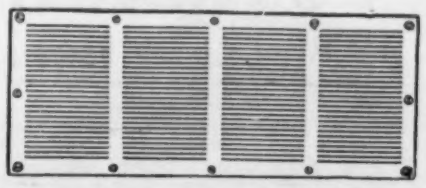
THE STILWELL-BIERCE & SMITH-VAILE CO., DAYTON, OHIO, U. S. A.

ANNANDALE

Screen Plate Co.,

PATERSON, N. J.





Manufacturers and Repairers of

SCREEN PLATES.

Our new Plates are made of the **VERY BEST METAL,** and for price and durability cannot be surpassed.

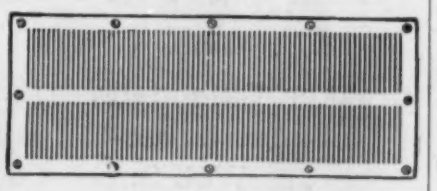
OLD PLATES RE-CLOSED.

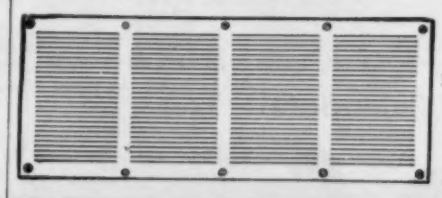
A. A. TRAIN,

21 Main St., FITCHBURG, MASS.,

MANUFACTURER OF

Screen Plates





OF BRASS OR CAST METAL,

AT PRICES

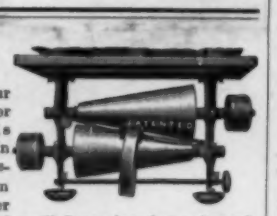
THAT CANNOT BE SURPASSED.

BEST STOCK USED.

Write for Prices and Gauges.

All Work Warranted.

THE EVANS FRICTION CONES



Are running forty-four (44) of the best paper machines in this country and in Europe, transmitting from 20 to 40 horse power each. Thousands of small Cones, hanging and standing, in operation, driving all kinds of machinery. Send for Catalogue "G."

EVANS FRICTION CONE CO., 85 Water St., Boston, Mass.

SAMPLES AND QUOTATIONS FURNISHED UPON APPLICATION.

IMPERIAL ASBESTOS SECTIONAL PIPE AND BOILER COVERING.

Asbestos Prepared Roofings.

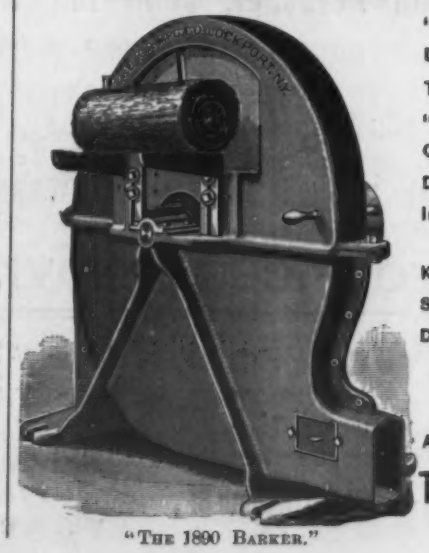
(Specially adapted to Paper Mills).

Chicago, Ill. **H. F. WATSON COMPANY,** Erie, Pa.

TREVOR MANUFACTURING CO., LOCKPORT, N. Y.

MANUFACTURERS OF

IMPROVED WOOD PULP MACHINERY.



"THE 1890 BARKER."

"Niagara" Grinders,

Double and Single Splitters,

The "Trevor" Improved Wet Machines,

"1890" and "Giant" Barkers,

Cross Sawing Machines,

Drag Saw Machines,

Improved Pulp Wood Slabbing and Sawing Machines,

Knot Borers,

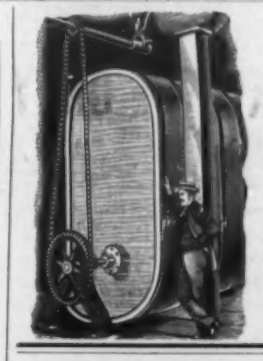
Stuff Pumps,

Double and Triple Plunger Pumps, for general use in Pulp and Paper Mills.

Write for Catalogue C and Discounts Address

Trevor Manufacturing Co.,

LOCKPORT, N. Y.



THE SAVAGE PERFECTING STUFF CHEST.

Fits into a narrow space and requires but little power to operate.

It has a double agitating motion, moving the stuff in different directions, which prevents "floating."

It empties itself clean; no waste of stuff and protects from dirt.

Quantity of stuff in chest always shown by indicator.

In writing give space in height, length and breadth if pressed for room; also the amount of stock in dry paper that the chest is wanted to hold.

PATENTED AND MANUFACTURED BY

E. L. SAVAGE, Mechanic Falls, Me.

FOSTER & BROWN, SACCARAPPA, MAINE.

MACHINISTS AND IRON FOUNDERS.

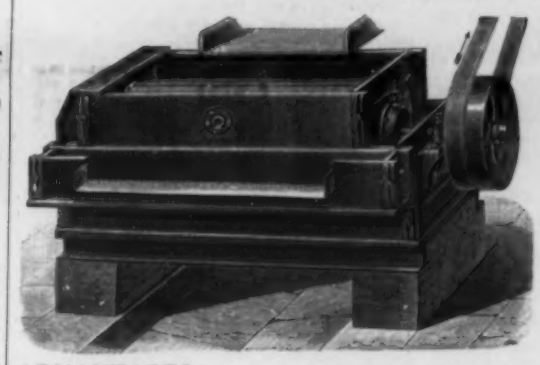
SPECIALTIES:

Improved Paper-Coating Machines; Hanging Machines and Power Reels for Coated Paper; the Merrill-Foster Noiseless Pulp Screens; Paper Slitting and Trimming Machines; Hardened and Ground Slitters; Automatic Elevators.

BUILT UNDER OUR OWN SUPERVISION.

THE "WANDEL" Rotary Sulphite Pulp Strainer,

PATENTED IN THE UNITED STATES AND CANADA.



And Now Used in the Following Mills:

33	Pulp	Mills in	Germany,
9	"	"	Austria,
5	"	"	Switzerland,
7	"	"	France,
1	"	"	Italy,
1	"	"	Spain,
2	"	"	England,
13	"	"	Norway and Sweden,
3	"	"	Denmark,
1	"	"	Finland,
6	"	"	Russia.

ADVANTAGES: Largest straining surface, combined with small requirement of room. Unsurpassed straining capacity. Absolutely reliable and noiseless work. No contact of the pulp with iron parts. Practical construction. Simple, durable, perfect. Price very moderate.

THE "WANDEL" ROTARY SULPHITE PULP STRAINER

Is the only system now adopted by the most important Sulphite Fibre Mills of Europe.

FOR FURTHER PARTICULARS APPLY TO

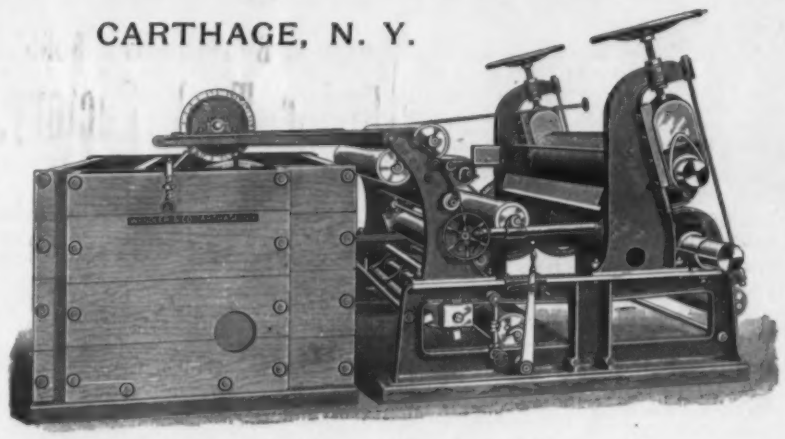
CHR. WANDEL, Reutlingen, Germany,

—OR—

GEO. HAMILTON, No. 74 WALL STREET, NEW YORK.

WENDLER & CO.,

CARTHAGE, N. Y.



STANDARD WET MACHINE.

A Full Line of Centrifugal and Fan Pumps.

ALL MACHINERY AND APPLIANCES USED IN THE MANUFACTURE OF WOOD PULP AND SULPHITE FIBRE.

Manufacturing News.

EASTERN STATES.

The Rumford Falls Paper Company, Rumford Falls, Me., has begun the construction of its sulphite fibre mill. The capacity of the mill will be 30 tons of fibre daily. This company is also building another boiler house.

The Fitchburg Paper Company, Fitchburg, Mass., is repairing its No. 2 Mill.

The Crocker Manufacturing Company, Holyoke, Mass., started up its mill on Monday after a week's shut down.

The Beebe & Holbrook Company, Holyoke, Mass., is putting in a new machine.

The Anchor Paper Company, Windsor Locks, Conn., is building a two story brick addition to its mill. The two large tanks of the water filter system will be placed on the lower floor of the addition.

One machine has been shut down at the Hurlbut Paper Company's mill, Lee, Mass., on account of low water.

Walter Bacon, Brookfield, Conn., has purchased several thousand dollars' worth of machinery for making paper boxes, and will fit up a factory on Maple street, where the business will be carried on.

The Fall Mountain Paper Company, Bellows Falls, Vt., has a large number of men at work in the woods of Windsor County, and expects to float some 8,000,000 feet of timber down the White River the coming season. This means a great deal of work, as the water in this stream is not always plenty enough for an easy float just when the lumbermen are anxious to get the logs down. Especially in the branch of the White River running through West Rochester it has been necessary to expend a large sum of money in getting the stream sufficiently free of obstructions to allow the passage of the logs.

The rag room of the Carew Paper Mill, South Hadley Falls, started up on August 9, after a shut down of several days.

The Excelsior Fibre Company, Manchester, N. H., recently purchased one of Wendler & Co.'s new style of wood chippers, pattern 1894.

The Fall Mountain Paper Company, Bellows Falls, Vt., has put in another "Gotham" eight plate 12x40 screen, built by the Brownville Iron Works, Brownville, N. Y. This is its eighth order.

A mill to manufacture paper pulp from esparto will probably be built at Shelton, Conn. Arrangements are now pending to that end and the formation of a company for the purpose is under way.

The Lawrence (Mass.) Machine Company, manufacturer of centrifugal pumping machinery, recently shipped one of its improved double suction centrifugal pumps, having a capacity of 3,000,000 gallons of water in twenty-four hours, to the Silver Spring Bleaching and Dyeing Company, Providence, R. I. This pump is to be used in pumping water from a series of twenty 3 inch driven wells through a line of pipe to the factory, an eighth of a mile distant, and is to be driven by belt from an electric motor which receives its current from a generator at the factory. Although this company has in use a large number of Lawrence pumps, this is the second one to be applied by it to its driven wells, the first having now been in successful operation about six years.

MIDDLE STATES.

C. R. Remington & Son, Watertown, N. Y., have put in two ten plate 12x40 "Gotham" screens, to be used on wood pulp.

The Dexter and Brownville Steamboat Company is reported to have brought a suit for $2,350 damages against the Dexter Sulphite Pulp Company for constructing a boom to catch logs on Black River at Dexter.

The addition to the plant of the Niagara Glazed Paper Company, Niagara Falls, N. Y., has been completed.

An effort is to be made to start the chemical fibre works at Spring City, Pa., and a committee has been formed to secure needed capital.

The Hudson River Water Power and Paper Company has decided to enlarge its plant at Mechanicsville, N. Y. Two paper machines, 101 and 120 inches wide respectively, have been ordered from the Pusey & Jones Company, Wilmington, Del., and it is expected that they will be exceedingly "crack" machines. The Holyoke Machine Company is to supply water wheels and six new engines, each of 1,600 pounds capacity. New buildings for the accommodation of the additional machinery are to be erected, and the new portion of the plant will probably be in operation by January next.

The Stone mill at Stanfordville, N. Y., which has been idle for some time, has been leased to Hoffman & Son, of Ancram, N. Y., who will start it up at an early day on tissue paper.

Charles W. Acker, Syracuse, N. Y., has devised a new method of making ornamental moldings from wood pulp, and will organize a company to exploit it.

Wendler & Co., Carthage, N. Y., have shipped one of their new style wood splitters to C. R. Remington & Son, Harrisville, N. Y., and to the Hudson River Pulp and Paper Company, Palmer's Falls, N. Y. This splitter is of new design and is built entirely of metal.

WESTERN STATES.

The Muncie Pulp Company, Muncie, Ind., has started up its mill, which is now running full time and with a full force.

The South Bend Paper Mill, South Bend, Ind., has started up.

The Mineral Point Linen and Fibre Company, Mineral Point, Wis., is reported to be making asbestos paper.

SOUTHERN STATES.

A paper mill is projected at Huntington, W. Va.

R. L. Burnett proposes to establish a paper box factory at New Orleans, La.

The Cecil Paper Mills, Singerly, Md., are being put in good order during the dull summer months.

The mill of the Singerly Pulp and Paper Company, Singerly, Md., is undergoing extensive repairs. Two or three machines are running during the dull times.

The Record Pulp Mill at Elkton, Md., was started up on full time on July 30.

CANADA.

The Megantic (Que.) Pulp Company has a large gang of men at work constructing its new mill.

Messrs. Webb, of Holyoke, Mass., have purchased and are now engaged in repairing the Springdale Mill at Penobsquis, N. B., preparatory to starting it up.

The Dominion Paper Company, whose mills at Kingsey Falls and Maddington Falls, Que., were burned recently, is about to rebuild them, and the towns of Richmond and Windsor Mills, Que., each offer a bonus of $25,000 to secure the location of the mills within their limits. Other towns are reported to be willing to make similar offers.

The Maritime Sulphite Fibre Company, Chatham, N. B., is shipping fibre to Great Britain.

Arrangements are being made for the speedy construction of pulp and paper mills at Drummondville, Que. Two hundred men will be employed and the water power of the St. Francis River will be utilized. The town council has voted a bonus of $25,000.

The Milton Pulp Company, Milton, N. S., recently put in one of Wendler & Co.'s barkers, pattern 1894.

The Sissiboo Falls Pulp Company, Sissiboo Falls, N. S., has put in an eight plate 12x40 "Gotham" screen, to be used on ground wood.

A $50,000 paper mill is to be established in Winnipeg, B. C.. The water power of the Red River is said to be very good just north of the city, and there are schemes on foot to use it for other mills.

General Notes.

The Sheffield Car Company, Three Rivers, Mich., writes to THE PAPER TRADE JOURNAL that its arrangement with E. F. Millard, covering the manufacture and sale of his pulp screen has expired by limitation, and that there is no present probability of its being renewed.

Frank L. Day, Glens Falls, N. Y., has invented a machine for cutting logs into blocks for pulp mills. This machine has been patented in this country and Canada. This invention will no doubt interest many readers of THE PAPER TRADE JOURNAL. Illustrations will be found in another column.

It will be interesting news to the exporters of American products that the Government of Salvador has made a material concession to this country by the admission of articles imported from the United States free of customs duties and any national or local tax, although an impost of 25 cents, collectable in gold only, is levied on each 100 pounds of merchandise, &c., sent from any other foreign country into the republic.

The preliminary work for carrying out the plans of the proposed Southern Exhibition, to be held in Baltimore, Md., in 1897, is progressing satisfactorily. It is said that fifteen buildings will be erected at a cost of about $1,600,000, and that the total of expenditures, exclusive of those providing for the accommodation of visitors, will be at least $5,000,000. It is not proposed to make the exhibition a local affair, or for the benefit of the South alone. As now planned it will be the most extensive exposition, except the two world's fairs, ever held in this country. The South is expected, of course, to make its very best showing.

James Muir has been appointed receiver for the assets of McDonald & Co., printers. 296 Sixth avenue, New York, in the suit brought by John M. McDonald, as administrator of William C. McDonald, one of the partners, against William J. Crow and Alexander Bryant, the other two partners, for an accounting.

The fifth annual convention of the United Brotherhood of Paper Makers will be held in the city of Holyoke, Mass., on September 1 and 2. The convention will be called to order at 3 o'clock, P. M., on Saturday, September 1. The committee of arrangements has engaged rooms for the delegates at the Hotel Hamilton, where a banquet will be held on Sunday evening, September 2.

To determine the moisture in steam: To one part of salt boiler water there is added 100 parts of pure condensed water, and into this is poured a small quantity of concentrated solution of yellow chromate of potash. Then a nitrate of silver solution containing about 1-10 per cent. of this salt is slowly added. With each drop the salt water turns locally orange red, but this color disappears at first; later on, when all the salt has been acted on, the whole fluid changes color from pale yellow to orange. The quantity of nitrate solution is noted, and then the experiment is repeated on the condensed steam from the engine, undiluted with distilled water. The ratio of the quantities of nitrate of silver solution used in the two tests expresses the amount of priming in per cent.

George D. Barnard, W. K. Richards and Floyd Schock, members of the firm of G. D. Barnard & Co., of St. Louis, Mo., were arrested at Meridian, Miss., July 28, by United States Marshal Martin L. Reddock, on an indictment found at the April term of the United States Court in Aberdeen, Miss. The charge was conspiracy to defraud the county and State government by entering into a blank book combination. They were each placed under $1,000 bonds for their appearance in Aberdeen next October.

On August 4 Justice Cullen, of the Supreme Court at Brooklyn, N. Y., handed down a decision dismissing the suit brought by Samuel S. Hart, of Brooklyn, against the Butterick Publishing Company, of New York. The suit involved in the neighbor-

THE "Hamilton" Felt.

"Best and Most Economical Made."

WISE PAPER MAKERS

don't always want to buy high priced imported Felts, nor do they want to experiment with inferior grades of domestic ones. The "Hamilton" answers their requirements in every respect.

In ordering mention kind of stock used, quality of paper made and speed of machine.

Shuler & Benninghofen, Hamilton, Ohio.

The W. S. Tyler Wire Works Co.,

CLEVELAND, OHIO.

MANUFACTURERS OF

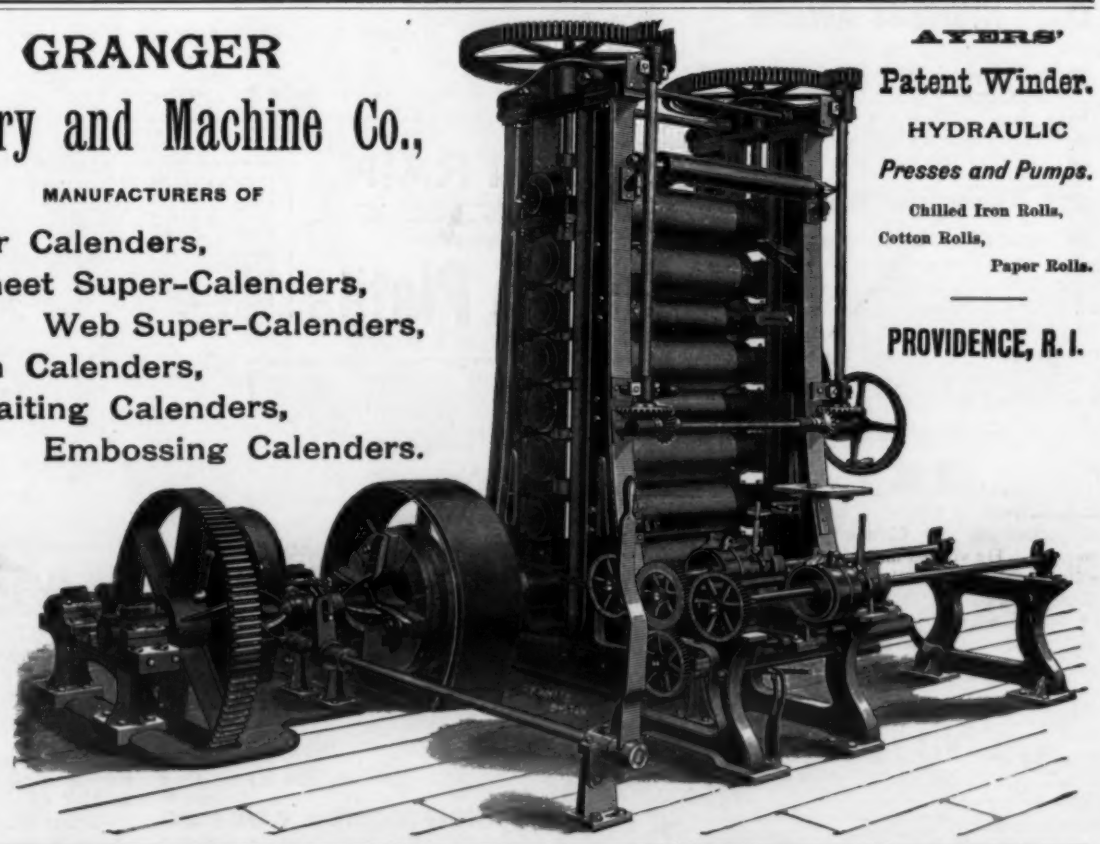
FOURDRINIER WIRES,

Cylinder Faces and Washer Wires.

GRANGER Foundry and Machine Co.,

MANUFACTURERS OF

Breaker Calenders,
Sheet Super-Calenders,
Web Super-Calenders,
Friction Calenders,
Plaiting Calenders,
Embossing Calenders.



AYERS' Patent Winder.

HYDRAULIC Presses and Pumps.

Chilled Iron Rolls,
Cotton Rolls,
Paper Rolls.

PROVIDENCE, R. I.

The American Talc Co.,

MANUFACTURERS OF A

SUPERIOR QUALITY OF MINERAL PULP OF ALL GRADES,

PROVIDENCE, R. I.

MINES AND MILL: FOWLER, N. Y.

NEW YORK OFFICE: ROOM 23 PARA BUILDING, 35 WARREN ST.

TELEGRAPH ADDRESS: GOUVERNEUR, N. Y.

NEW MILL. LATEST MACHINERY. STEAM POWER.

THE GENERAL FIRE EXTINGUISHER COMPANY,

CONTROLLING THE INVENTIONS AND APPARATUS PERTAINING TO AUTOMATIC SPRINKLERS OF

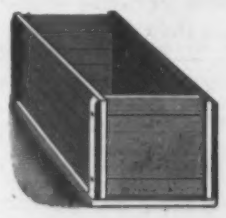
Frederick Grinnell, William Neracher, John Hill, William Kane and others.

INFORMATION AND PROPOSALS FURNISHED AT THE SEVERAL DEPARTMENT AGENCIES, NAMELY:

NEW YORK: 413 Broadway.
PHILADELPHIA: Mutual Life Building.
CHICAGO: 226 La Salle Street.
CLEVELAND: Society for Savings Building.
BOSTON: 173 Devonshire Street.
BUFFALO: City Bank Building.
ST. LOUIS: 710 Odd Fellows Building.
Also at WARREN, OHIO, and COLUMBUS, GA.

AND AT THE

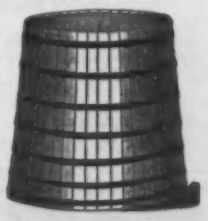
EXECUTIVE OFFICES, PROVIDENCE, R. I.



GEO. WOOLFORD, Manufacturer of all kinds of CEDAR TUBS FOR PAPER MILL WORK, DRAINERS, STUFF CHESTS, WATER TANKS, &c.

In sending for estimates state if measurements are inside or outside and thickness of wood desired.

2240-42-44-46-48 North Ninth St., PHILADELPHIA, PA.



hood of $250,000, representing one-half of the profits of the company covering a period of about nine years. Mr. Hart alleged that some twenty years ago he agreed to establish for the company a pattern printing plant under an arrangement that he was to receive a salary of $50 a week until the business was put on a paying basis; then he was to have one-half of the profits. Plaintiff alleged that in 1885 the business had paid for itself and that thereafter he was entitled to one-half of the profits. Instead of keeping its agreement, plaintiff said he was turned out of the concern in 1890. The defendant denied Hart's allegation. It was claimed that Hart was to furnish one-half of the capital, and upon failing to do this the concern agreed to pay him $50 a week, and when the business paid for itself he was given the option of remaining on salary or of taking half of the net profits. He elected to take the salary. Justice Cullen in dismissing the suit held that there was no proof that the parties entered into the contract claimed by the plaintiff.

Obituary.

Thomas F. Burke, senior member of the printing firm of Burke Brothers, New York, died August 8 after a short illness.

William W. Lockwood, for many years a prominent stationer at Stamford, Conn., died there on August 7. He was seventy-three years old. Soon after the war he retired from active pursuits, and a part of the time made his home in New York. Three sons and a daughter survive him.

Mexican Fibres.

Great interest is being taken in the development of the uses of the fibrous plants which grow in greatest abundance in the Republic of Mexico.

Several of the leading newspapers and periodicals published in that country have within a very recent date discontinued the use of imported paper, substituting therefor paper manufactured at home and from material grown at home. The experiments thus far made have proven most satisfactory, and it is anticipated that within a very short time Mexico will have developed within her borders another independent and profitable industry.

Recently Prof. Frances Jeffrey, of Montana, arrived in Monterey for the purpose of examining the fibrous plants of the country. He visited many of the cities and villages along the line of the Mexican Gulf Railway and elsewhere in the State of Tamaulipas, and made many crucial tests of the pulp of the cacti, maguey, banana, palm, pitas, wild pineapple, sugar cane, rice straw and fibrous timbers. From the pulp of the maguey he found he could make a better quality of tinted paper, and from the fibre a better quality of cloth than is now make from flax. From the pulp of the pineapple his experiments showed that he could manufacture a quality of white paper superior to any now made from fibrous plants, and from the fibre of the pineapple he can make a cloth of finer quality and more durable than silk.

The supply of all the above named fibrous plants is inexhaustible and cheap, and the profits that may be made by converting them into the various useful commodities for which they seem so well adapted are incalculable.

Professor Jeffrey, who has had large experience in the manufacture of paper, is organizing a stock company of $300,000, paid up capital in gold, and will at once establish a large mill in Monterey for the purpose of carrying into practical effect the result of his observations and experiments.

Transmitting Power.

It is generally known that a shaft will transmit power in proportion to its running velocity, and therefore the faster the shaft runs the lighter it should be within reasonable limit. The use of extremely heavy shafting is not advisable under any circumstances, unless actually needed to perform the work required. Some imagine that a large shaft, affording a very strong margin of safety, is the most economical and tenable mechanical position, unless tempered with sound judgment and much wisdom, sufficient of both to select properly. That there should be an ample margin of strength no one will attempt to deny, but shafting multiplies in strength so rapidly as sizes increase that the unenlightened are apt to make the selections much too large when aiming at only ample strength margin.

Prof. Chas. A. Hussey, of New York, has made an improvement in incandescent lamps, whereby the current may be regulated in the same way as an ordinary gas jet. Three degrees of light are shown—one very low, useful for night time; second one, equal to an ordinary incandescent light, and the third, giving about twice the ordinary light without the use of electricity.

Mineral Fillers for Paper.

Mineral fillers for paper are treated of under the head of "Loading" in Chapter V. of the "Chemistry of Paper Making," which is now in press and will soon be issued by Howard Lockwood & Co. The following is extracted from that chapter:

The use of mineral fillers has come to have a recognized and legitimate place in paper making, and the presence of such fillers in a sheet is not under ordinary circumstances to be regarded as evidence of adulteration. They are used quite as much for their benefical effect upon the feel and finish of the paper as through a desire to lower the cost of production. Many of the best grades of book paper could not be made at all without the use of some filler in considerable amount to give the smoothness of surface required to bring out the fine lines of process cuts.

The materials commonly employed in this connection are some of the better sorts of china clay or kaolin, ground talc and sulphate of lime. In preparing these for the paper maker the clays are mixed with water to form a thin cream, which is then sent through long sluice ways or settling boxes with riffles to catch and retain the coarser particles which settle out. The water is then allowed to drain off from the finest particles, which alone are suitable for paper making, and the clay comes to the market in the form of fairly dry lumps of moderate size.

The ground talc is usually not floated, but it is put instead through a fine bolting cloth. Sulphate of lime when used in the form of ground gypsum is similarly treated.

The value of the filling material for use in paper making is dependent upon several factors, those of most importance being color and fineness. The suitability of the material is also largely determined by its specific gravity, as this of course affects the rate at which the particles of filler settle. The retention is thus likely to be low in case of a very heavy filler, and the paper is likely to be thin for weight. Solubility in water to any considerable extent of course unfits a material for use as a filler. Even the slight degree of solubility possessed by sulphate of lime is sufficient to cut down the retention appreciably.

A filler for use in high grade papers should be almost entirely free from either grit or mica, since the former is apt to mark the calender rolls, while the shiny specks of the latter are very apparent in the finished sheet.

CLAYS.

These are formed by the weathering and disintegration of feldspathic rocks. The presence of mica indicates that the source of the clay was granite. With a moderate quantity of water they form a sticky, plastic mass, with more or less soapy feel. Chemically considered they are essentially silicate of alumina. Since the value of clay for the uses of paper making is so largely determined by color, only those sorts like the china clays, in which the content of iron is small, are suitable. The composition of the clays in general use by paper makers is given below, and their microscopical appearance is shown in Figures 66, 67 and 68:

ANALYSES OF CLAYS.

Griffin & Little.

	I.	II.	III.	IV.
Moisture, loss at 100° C.	0.30	10.15	7.09	9.10
Combined water, volatile at red heat	12.37	10.77	11.27	12.79
Silica (SiO_2)	47.56	42.72	43.50	41.16
Alumina (Al_2O_3)	38.12	33.44	35.48	35.84
Sesquioxide of iron (Fe_2O_3)	0.08	1.04	trace.	0.67
Lime (CaO)	0.39	1.61	0.17	0.42
Magnesia (MgO)	0.00	0.16	0.41	0.02
Alkalis	1.28	0.11	2.08	...
	100.00	100.00	100.00	100.00
Specific gravity of dry substance	2.8625	2.5585		2.5451
Grit by flotation test (per cent.)	0.65	6.83		0.10

AGALITE.

This is a finely ground talc, and is, chemically, a silicate of magnesia. It has an especially good color, and a smooth, soapy feel. It is not nearly so finely reduced as clay, and the proportion of grit is much larger. It is, however, retained well in the paper, and large quantities of it are used. Its appearance under the microscope is shown in Fig. 69.

ANALYSIS OF AGALITE.

Griffin & Little.

	Per Cent.
Moisture and combined water, volatile at red heat	1.40
Silica (SiO_2)	61.89
Alumina (Al_2O_3)	1.36
Sesquioxide of iron (Fe_2O_3)	0.44
Lime (CaO)	4.21
Magnesia (MgO)	30.70
	100.10

Specific gravity, 2.6875.

PEARL HARDENING.

Crystallized sulphate of lime, $CaSO_4$. $2H_2O$, prepared by precipitating a solution of calcium chloride with one of acid sodium sulphate, or with dilute sulphuric acid, has been largely imported and used as a filler in the finer grades of paper under the name of pearl hardening. Abroad it is sometimes called annaline. Crown filler is another trade name for the same material.

The crystallized sulphate thus prepared is especially white, clean and free from grit. As found in the market in moist lumps, it contains a considerable percentage of water in addition to the water of crystallization. The latter amounts to 20.93 per cent. on the chemically pure, and otherwise dry, substance; and this combined water remains with the filler from any other finely pulverized mineral.

FIBROUS ALUMINE.

A new filler, which has several important advantages, has lately been put upon the market under this name. It is a fine, smooth white powder, almost entirely free from grit, and has the following composition:

ANALYSIS OF FIBROUS ALUMINE.

Griffin & Little.

	Per Cent.
Insoluble in acid	0.32
Sulphate of lime ($CaSO_4$)[1]	82.55
Sulphate of alumina ($Al_2(SO_4)_3$)	5.92
Sulphate of iron ($Fe_2(SO_4)_3$)	0.22
Carbonate of lime ($CaCO_3$)	1.04
Carbonate of magnesia ($MgCO_3$)	0.34
Combined water	9.67
	100.06

[1] Equivalent to crystallized sulphate of lime ($CaSo_4$. $2H_2O$), 104.40.

Examination of the above analysis discloses the fact that the filler consists mainly of anhydrous sulphate of lime, and that the alumina present is also combined as sulphate. This sulphate of alumina is therefore as readily available for use in sizing as though it were so much alum added directly to the engine. Upon agitation with water the anhydrous sulphate of lime combines with two molecules of water of crystallization, and assumes the fibrous, crystalline structure which is shown in Fig. 71, and from which the filler derives its name. Every 100 pounds of the sulphate of lime as put in the engine forms 126 pounds of the crystallized sulphate, and this fact, together with the fibrous character of the crystals, has an important bearing upon the quantity retained. Our comparative tests have shown that after hydration fibrous alumine settles much more slowly than other mineral fillers, and this not only aids retention but ensures a more even distribution of the filler through the paper. The sizing power of 100 pounds of fibrous alumine is about equal to that of 12 pounds of alum of good grade.

RETENTION.

Fillers are usually added to the engine after the stock has been well beaten, and before the addition of the size and alum, as the precipitation of the size tends to fix the filler in the fibre. Clays are made into a cream with water, and when intended for the better grades of paper are strained through a piece of Fourdrinier wire before going to the engine. Pearl hardening is similarly beaten up, although the straining is unnecessary. Agalite is put into the engine dry. Fibrous alumine is agitated briskly in a separate vessel with water for about one-half hour to about the desired crystallization, and is then run into the engine through a revolving strainer which holds back any of the larger crystals.

The quantity of filler retained by the paper may vary from 30 to 80 per cent. of that introduced into the engine. The higher figure is only reached under exceptional conditions, and a retention of 50 per cent. is usually regarded as satisfactory. A number of factors influence the retention, but although it is easy to point out in a general way the direction of their effect, it is impossible to lay down rules which shall apply to any one factor while the others are ignored. The kind of stock and the thoroughness with which it has been beaten and sized has much to do with the quantity of filler left in the sheet. Slow stuff holds the filler much better than that which is "quick," and allows the water to leave it rapidly on the wire. A heavy pull on the suction boxes cuts down retention, and there is also of course a heavy loss in the return water when this is allowed to run to waste. This may amount to a pound of filler in every 30 gallons. Thick stuff and heavy papers generally show better retention than thin papers or stuff which is much diluted, and the percentage held varies also with the different fillers and the quantities used. With pearl hardening, for example, the proportion retained is usually greater when the quantity used is large than when it is inconsiderable.

USE OF STARCH.

J. Wiesner, who has examined some hundreds of ancient papers, finds that prior to the thirteenth century starch was the only material used for sizing. It is still used in small quantities as a filler and is thought to give a better feel and surface to the paper. It is either boiled up with the size or the boiled paste may be added directly to the engine. Often the starch is merely mixed with water and added after the mineral filler. Its value is doubtful, as many tests prove the retention to be extremely low.

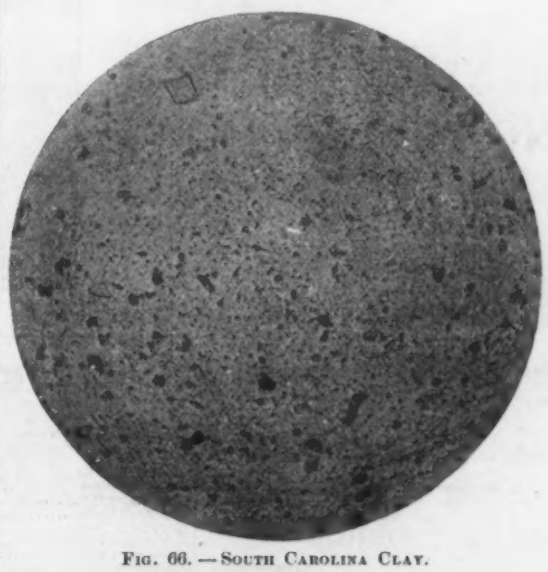


FIG. 66.—SOUTH CAROLINA CLAY.

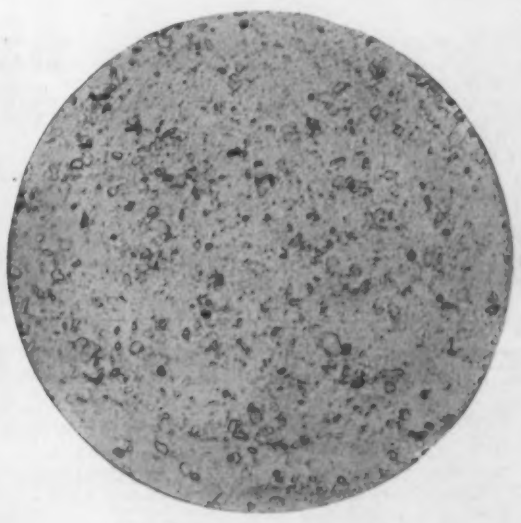


FIG. 67.—ENGLISH CHINA CLAY.

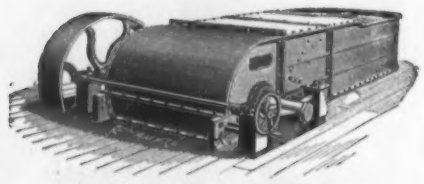
FIG. 68.—LEAMOUR CLAY.

FIG. 69.—AGALITE.

FIG. 70.—PEARL HARDENING.

FIG. 71.—FIBROUS ALUMINE.

THE J. H. HORNE & SONS CO., LAWRENCE, MASS.



THE "HORNE" ENGINE.

120

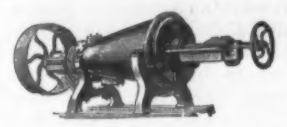
NOW IN OPERATION.

BUILDERS OF HIGH GRADE EXTRA HEAVY

PAPER MACHINES.

OUR NEW MONARCH MACHINE

IS ESPECIALLY DESIGNED FOR FAST RUNNING.



THE "HORNE" JORDAN.

IS FAST REPLACING

ALL OTHER MAKES.

THE GARDNER PULP CO.,

GOUVERNEUR, N. Y.

MANUFACTURERS OF

Asbestos Pulp and Fibrous Talc

FOR PAPER MAKERS.

THE GOTHAM NOISELESS SCREEN.

WE HAVE SOLD A FEW SCREENS, AS FOLLOWS:

HOUSES.	CITY AND STATE.	SCREENS.	ORDERS
The Rumford Falls Paper Co.	Rumford Falls, Me.	20	..
The Niagara Falls Paper Co.	Niagara Falls, N. Y.	18	..
High Falls Sulphite Pulp Co.	Potsdam, N. Y.	10	..
The Empire Pulp Co.	Black River, N. Y.	1	..
Globe Paper Co.	Brownville, N. Y.	2	..
Union Pulp Co.	Carthage, N. Y.	1	..
Frontenac Paper Co.	Dexter, N. Y.	1	..
Leonard & Gilmore	Dexter, N. Y.	1	..
Outterson Paper Co.	Brownville, N. Y.	3	3
Oswego Falls Paper Co.	Fulton, N. Y.	4	3
Gouverneur Wood Pulp Co.	Gouverneur, N. Y.	4	4
Knowlton Paper Co.	Watertown, N. Y.	1	..
Ontario Paper Co.	Watertown, N. Y.	2	2
Herkimer Paper Co.	Lyons Falls, N. Y.	4	3
G. H. P. Gould	Port Leyden, N. Y.	1	..
Gould Paper Co.	Port Leyden, N. Y.	2	2
Racquette River Pulp Co.	Colton, N. Y.	3	..
Sparks Manufacturing Co.	Hamburg, N. J.	1	..
Charles Callender	Glendale, Mass.	2	2
Merrimac Paper Co.	Lawrence, Mass.	2	2
Connecticut Paper Co.	Holyoke, Mass.	1	..
Carew Manufacturing Co.	South Hadley Falls, Mass.	2	2
Rice, Barton & Fales	Worcester, Mass.	3	2
Eaton, Dikeman & Co.	Lee, Mass.	1	..
Fall Mountain Paper Co.	Bellows Falls, Vt.	12	7
Wyman, Flint & Sons	Bellows Falls, Vt.	3	2
National Metal Edge Box Co.	Readesboro, Vt.	1	..
Glen Manufacturing Co.	Berlin Falls, N. H.	6	3
Wilder & Co.	Ashland, N. H.	1	..

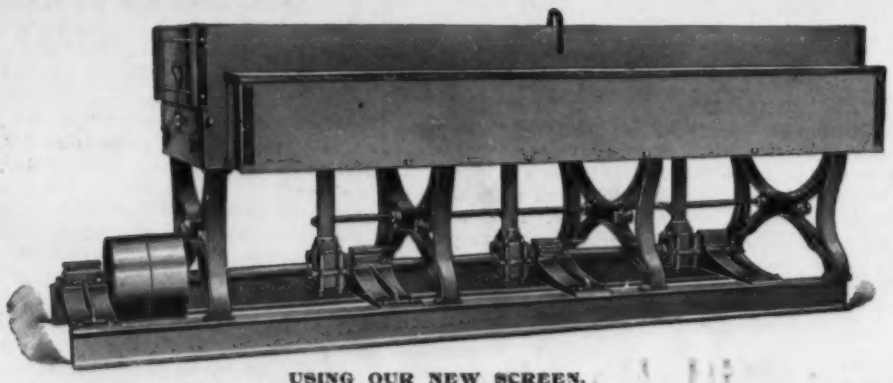
HOUSES.	CITY AND STATE.	SCREENS.	ORDERS
Umbagog Pulp Co.	Livermore Falls, Me.	2	..
Bangor Paper Co.	Bangor, Me.	4	..
Jay Paper Co.	Jay, Me.	1	..
White & Wells	Waterbury, Conn.	2	2
St. Cloud Paper Co.	St. Cloud, Minn.	1	..
Columbia Paper Co.	Buena Vista, Va.	2	..
Anderson Paper Co.	Anderson, Ind.	3	2
Kaukauna Paper Co.	Kaukauna, Wis.	1	..
Willamette Pulp and Paper Co.	Oregon City, Ore.	9	4
California Paper Co.	Agnews, Cal.	1	..
Tennessee Pulp Co.	Memphis, Tenn.	1	..
Estate of Richard Carter	Glendale, N. Y.	1	..
Charles Wackerhagen	Canaan Four Corners, N. Y.	1	..
Smeallie, Phillips & Co.	Amsterdam, N. Y.	1	..
O. E. Martin	Norwood, N. Y.	1	..
Jefferson Paper Co.	Black River, N. Y.	2	2
St. Lawrence Paper Co.	Dexter, N. Y.	3	3
Payne & Blinn	Chatham, N. Y.	1	..
M. M. Pilisbury	Napanoch, N. Y.	1	..
Victoria Paper Co.	Fulton, N. Y.	2	2
Philip McGuire	Forestport, N. Y.	1	..
Hartland Paper Co.	Middleport, N. Y.	1	..
Standard Pulp Co.	Jennie's Falls, N. Y.	3	..
Bacon Paper Co.	Lawrence, Mass.	1	..
Watertown Paper Co.	Watertown, N. Y.	3	3
Alpena Sulphite Pulp Co.	Alpena, Mich.	4	2
Hollingworth & Whitney	Winslow, Me.	2	2
Fulton Paper Co.	Fulton, N. Y.	2	2

AND OTHERS.

BROWNVILLE IRON WORKS, Brownville, N. Y.

ALSO MANUFACTURERS OF Wet Machines, Centrifugal Pumps, &c.

TICONDEROGA MACHINE CO., TICONDEROGA, N. Y.



USING OUR NEW SCREEN.

Glen Manufacturing Co., Berlin Falls, N. H., 13; Barclay Fibre Co., Sangerties, N. Y., 5; Katahdin Pulp and Paper Co., Lincoln, Me., 10; Haverhill Paper Co., Haverhill, Mass., 2; The J. & J. Rogers Co., Ausable Forks, N. Y., 10; New York and Pennsylvania Co., Johnsonburg, Pa., 1; H. J. Roberts, Birmingham, Conn., 1; Ticonderoga Pulp and Paper Co., Ticonderoga, N. Y., 4; Piscataquis Falls Pulp and Paper Co., Enfield, Me., 2

USING OUR OLD SCREEN.

Piscataquis Falls Pulp and Paper Co., Enfield, Me., 12; Howland Falls Pulp Co., Howland, Me., 10; Penobscot Chemical Fibre Co., Great Works, Me., 4; Willamette Pulp and Paper Co., Oregon City, Ore., 1; Bangor Pulp and Paper Co., Basin Mills, Me., 2; Kane's Falls Pulp Co., Fort Ann, N. Y., 2; Westmoreland Paper Co., West Newton, Pa., 6; Dexter Sulphite Pulp and Paper Co., Dexter, N. Y., 3; Otis Falls Pulp Co., Livermore Falls, Me., 3; Michigan Sulphite Co., Port Huron, Mich., 2; Singerly Pulp and Paper Co., Singerly, Md., 1; Ticonderoga Pulp and Paper Co., Ticonderoga, N. Y., 7.

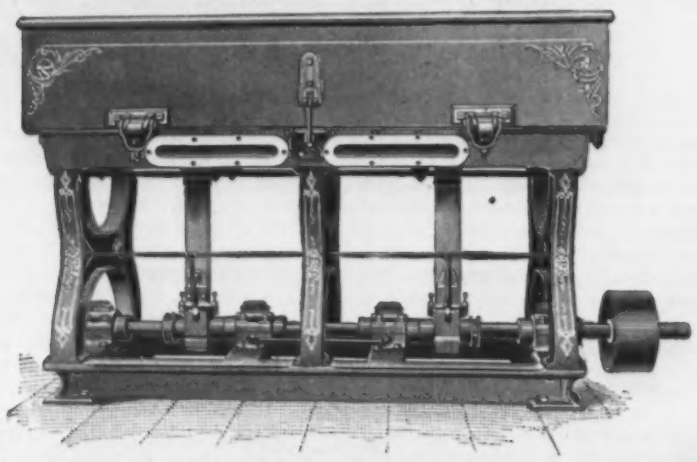
USING OUR BARKERS.

The J. & J. Rogers Co., Ausable Forks, N. Y., 4; Katahdin Pulp and Paper Co., Lincoln, Me., 4; High Falls Sulphite Pulp and Mining Co., Potsdam, N. Y., 2; Glen Manufacturing Co., Berlin Falls, N. H., 4; Oswego Falls Pulp and Paper Co., Fulton, N. Y., 1; Treadwells Mills Pulp and Paper Co., Plattsburgh, N. Y., 3; Shenandoah Pulp Co., Harper's Ferry, W. Va., 3; Miller Bros. & Co., Glen Miller, Ont., Canada, 1; Piscataquis Falls Pulp and Paper Co., Enfield, Me., 6; Kane's Falls Pulp Co., Fort Ann, N. Y., 1; Manufacturing Investment Co., Madison, Me., 9; Umbagog Pulp Co., Livermore Falls, Me., 2; Moosehead Pulp and Paper Co., Solon, Me., 1; Bennington Falls Pulp Co., Middle Falls, N. Y., 1; Saranac River Pulp and Paper Co., Cadyville, N. Y., 1; Smith & Martin, Plattsburgh, N. Y., 1; Otis Falls Pulp Co., Livermore Falls, Me., 1; Hollingsworth & Whitney Co., Waterville, Me., 3; Gilbert & Bell, Waterford, N. Y., 1; Laurentide Pulp Co., Montreal, Canada, 1; Hudson River Pulp and Paper Co., Palmer's Falls, N. Y., 1; Battenkill Paper Co., Greenwich, N. Y., 1; Ticonderoga Pulp and Paper Co., Ticonderoga, N. Y., 1.

MANUFACTURERS OF

COMPOUND AUTOMATIC HIGH SPEED STEAM ENGINES, PAPER MILL AND POWER TRANSMITTING MACHINERY.

SEND FOR CATALOGUE AND BLUE PRINTS.



WE LEAD AND OTHERS FOLLOW! Over 200 "SUCCESS" Screens in use on all kinds of stock.

"THE SUCCESS" LEADS THEM ALL.

READ THE FOLLOWING LIST OF USERS AND BE CONVINCED:

The Glens Falls Paper Mill Co., Glens Falls and Fort Edward, N. Y.	**91**	A. H. Hubbard Co., Norwich, Conn.	2
The Hudson River Pulp and Paper Co., Palmer's Falls, N. Y.	**50**	Agawam Paper Co., Mittinesque, Mass.	1
The Burgess Sulphite Fibre Co., Berlin Falls, N. Y.	12	The Worthy Paper Co., Mittinesque, Mass.	1
Marinette and Menominee Paper Co., Marinette, Wis.	8	Chester Paper Co., Huntington, Mass.	1
Combined Locks Paper Co., Combined Locks, Wis.	4	Bayless Paper Co., Binghamton, N. Y.	2
Wilkinson Bros. & Co., Derby, Conn.	5	Wagman & Thorp Co., Fort Miller, N. Y.	2
Sandy Hill Power and Pulp Co., Sandy Hill, N. Y.	4	Moore & Thompson Paper Co., Bellows Falls, Vt.	1
The Riverside Paper Co., Holyoke, Mass.	**4**	Allen Bros. Co., Sandy Hill, N. Y.	1
The Holyoke Paper Co., Holyoke, Mass.	1	Hudson River Water Power and Paper Co., Mechanicsville, N. Y.	1
Franklin Paper Co., Holyoke, Mass.	1	Ohio Paper Co., Niles, Mich.	1
Chemical Paper Co., Holyoke, Mass.	2	Otis Falls Paper Co., Livermore Falls, Me.	19
Beebe & Holbrook Co., Holyoke, Mass.	2	J. D. Mulrenan, Hadley, N. Y.	2
		Saranac River Pulp and Paper Co., Cadyville, N. Y.	2
		Herkimer Paper Co., Herkimer, N. Y.	3
		Winnipisiogee Paper Co., Franklin, N. H.	2

Jas. Ramage Paper Co., Monroe Bridge, Mass.	1		
Wilder & Co., Olcott Falls, Vt.	1		
Syms & Dudley Paper Co., Watervliet, Mich.	2		
The Little Chute Pulp Co., Little Chute, Wis.	1		
Niagara Falls Pulp and Paper Co., Niagara Falls, N. Y.	1		
Kimberly & Clark Co., Kimberly, Wis.	1		
Atlas Paper Co., Appleton, Wis.	1		
Shattuck & Babcock Co., De Pere, Wis.	1		
The Wanaque River Pulp and Paper Co., Wanaque, N. J.	1		
Nekoosa Paper Co., Nekoosa, Wis.	1		
Niagara Falls Paper Co., Niagara Falls, N. Y.	2		
The Maritime Sulphite Fibre Co., Chatham, New Brunswick, Canada	4		
The Uncas Paper Co., Norwich, Conn.	1		
Sandy Hill Pulp Co., Sandy Hill, N. Y.	1		
Kimberly & Clark Co., Neenah, Wis.	2		

MADE IN THREE SIZES: SIX, EIGHT AND TEN PLATES.

Wood Pulp Grinders, Improved Patterns.
Wet Machines, Improved Patterns.
Friction Pulleys and Couplings.

OTHER SPECIALTIES: Double and Single Stuff Pumps, Improved Patterns. Soft Steel Slitters, Improved Patterns. Wood Chippers.

FRICTION PULLEY AND MACHINE WORKS, SANDY HILL, N. Y.,

SOLE MANUFACTURERS OF THE "SUCCESS" SCREEN.

Fly-Wheel Construction.

An English inventor proposes an improved system of wheel construction, claimed to be of special value in the case of heavy fly wheels, but not of exclusive adaptation. It is proposed to avoid the expensive machinery commonly required for such wheels, and the ordinary wheel arms are replaced by wrought iron rods which are U shaped and lap around the hub of the wheel, the ends of the U being secured to the rim by nuts. The driving power is transmitted to the spokes entirely by friction, and as the arc of contact of the spoke on the rim is fairly large, the principle of band friction comes into play, so that very great torques can be transmitted without any risk of slipping.

For a 20 ton wheel the plan is to use thirty-two spokes, each 2 inches in diameter, secured to the rim by split nuts. Such a fly wheel as usually built would, it is remarked, have six or eight arms, and when running at high speed the centrifugal force tends to bend the rim between, such bending being a serious addition to the direct circumferential tension due to the same force; but the numerous spokes of the new construction greatly reduce this bending, while at the same time the wrought iron spokes are so much stronger that the wheels can be run at a much higher speed.

Too much tension tends to destroy the elasticity of a belt, and when its tension is gone the belt is useless. Then, too, useless tension makes useless friction, and friction wears out journals and boxes, while it consumes more power.

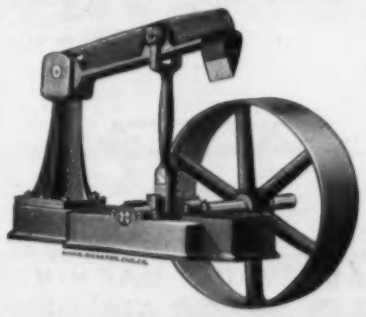
CYRUS CURRIER & SONS,

NEWARK, N. J.,

Paper Machinery.

KINGSLAND

BEATING ENGINE.



C. A. LAWTON,

DE PERE, WIS.,

Manufacturer of Barkers, Splitters and Saws for Pulp Mills. Shafting and Pulleys a Specialty.

Write for Prices.

NOW READY!

THE TWENTIETH EDITION

— OF —

LOCKWOOD'S DIRECTORY

— OF THE —

Paper, Stationery and Allied Trades

1894-5.

Price, Two Dollars a Copy,

POSTAGE PREPAID

THIS pioneer and standard book, now in the twentieth year of its publication, enjoys the confidence of every person in the trades which it represents. It is carefully and thoroughly compiled and edited each year. After one edition has been printed the type is distributed, and when a new edition is undertaken the data, item by item, are obtained and put into type especially for it, thus making the work reliable. Altogether about 475 pages set forth facts which must be invaluable to all engaged in the making and selling of Paper and Stationery, as well as all others in the allied branches of the trades.

It enables manufacturers, buyers and sellers to come together for mutual benefit.

The book includes a list of Paper Makers in the United States, Canada and Mexico; Wholesale and Retail Stationers, Paper Dealers; Leading Printers, Lithographers, Book Publishers, Bookbinders, Wall Paper Printers; Blank Book, Paper Bag, Paper Box, Envelope, Pad and Tablet Manufacturers; Railroad Buyers, &c., in the United States.

Orders filled according to date of receipt. Address

HOWARD LOCKWOOD & CO.,

126 & 128 Duane St., New York.

NEW AMERICAN TURBINE.

FROM SIX TO SIXTY-SIX INCHES DIAMETER.
Are in practical operation under heads from 4 to 100 feet head; are strong, durable and give high efficiency.

BEATING ENGINES

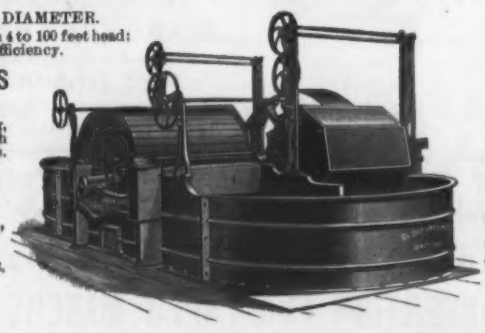
Cast Iron or Wood Tubs.

Made heavy and strong, double lightered, with well made Cone Washers.

DAYTON GLOBE IRON WORKS CO.,

Successors to STOUT, MILLS & TEMPLE,

Dayton, Ohio, U. S. A.

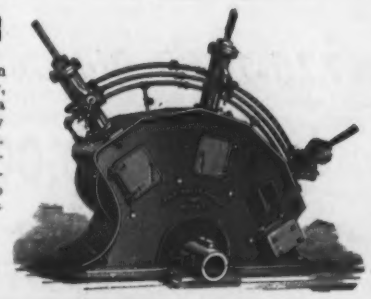


D. T. MILLS'

WOOD PULP GRINDER

Superior in construction to any made. Capacity, 4,000 to 6,500 pounds extra good pulp per day, dry weight, per each grinder. Hydraulic feeds, fine adjustments; strong and reliable in every way. Two and three pocket machines.

Descriptive Catalogue Sent Free.

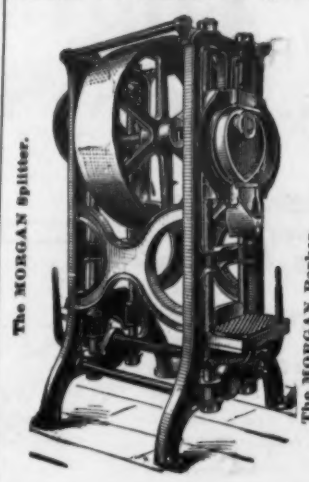


APPLETON MACHINE COMPANY,

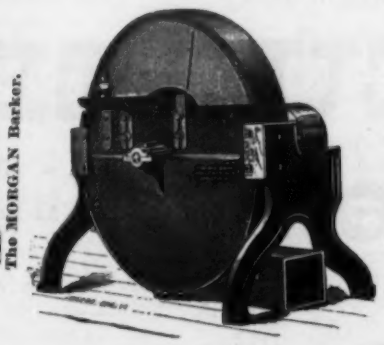
APPLETON, WIS.,

— MANUFACTURERS OF —

The New Frambach and Badger Pulp Grinders,



The MORGAN Splitter.



The MORGAN Barker.

Wood Barkers,
Splitters,
Screens,
Bolt Sawing Machines,
Knot Borers,
Chippers,
Sulphur Burners
and
Wet Machines.

GOODRICK Screen.

J. & W. JOLLY, MANUFACTURERS OF

McCORMICK'S HOLYOKE TURBINES,

BOTH VERTICAL and HORIZONTAL.

PAPER MILL MACHINERY.

Allen's "Blue Spot" Preventative. Screens and Vats for Paper Machines.

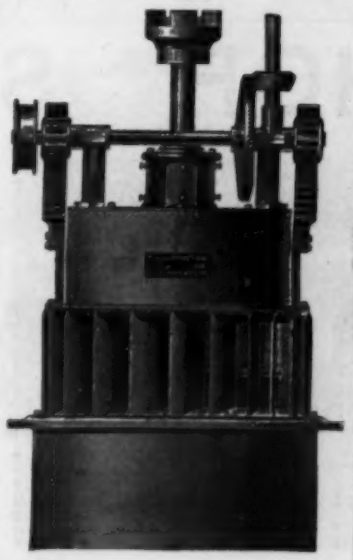
RAG ENGINES AND JORDAN ENGINES MADE AND REFILLED.

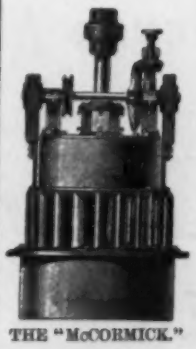
Bleach Boilers, Fan Dusters, Ferry's Patent Star Dusters.

PAPER CALENDER ROLLS MADE AND REPAIRED. CHILLED ROLLS. SHEET, SUPER AND WEB CALENDERS.

POWER SUCTION PUMPS, STUFF PUMPS, POWER BOILER PUMPS, SUCTION BOXES AND PLATES. PULLEYS, SHAFTING, GEARING, &c.

HOLYOKE, MASS., U. S. A.





THE "McCORMICK."

McCORMICK AND SUCCESS TURBINES,

VERTICAL OR HORIZONTAL.

The McCORMICK Turbine gives more power per diameter with a higher percentage of useful effect from the water used than any other water wheel heretofore made. All sizes, both right and left hand, tested in the Holyoke testing flume.

The SUCCESS Turbine, long and favorably known in the paper trade as a first-class water wheel, possesses valuable features found in no other turbine, and gives a high percentage of useful effect from the water used.

THE McCORMICK and SUCCESS TURBINES are especially adapted for driving Paper and Pulp Mills and are extensively used by the largest manufacturers in the United States and Canada. Parties using wheels which are unsatisfactory and those contemplating the improvement of powers will find it to their interest to confer with me, as I am willing to guarantee results where others have failed, no matter what make of turbines has been tried.

State requirements and send for catalogue.

Heavy Power Transmitting Machinery a Specialty.

S. MORGAN SMITH, York, Pa.

THE "SUCCESS."

JEFFREY

Roller, Steel Drag, Cable and Special Chains.

FOR

ELEVATING AND CONVEYING MACHINERY

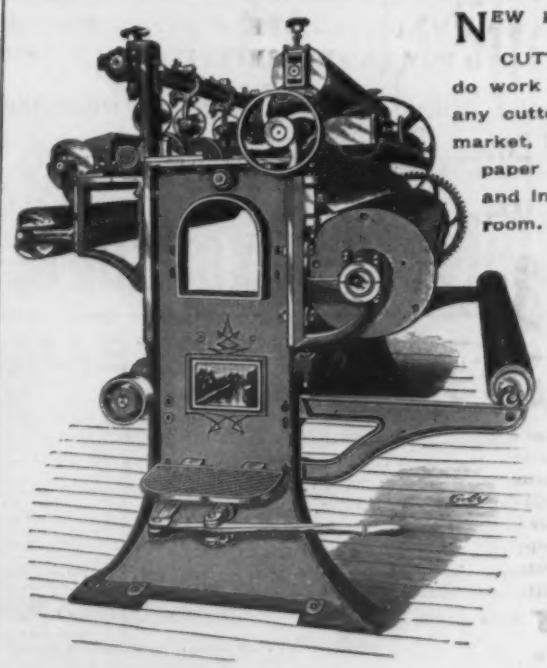
FOR HANDLING MATERIALS OF ALL KINDS.

Power Transmission Machinery.

WIRE CABLE CONVEYORS.

For long & short distance Conveying.

THE JEFFREY MFG. CO. Columbus, Ohio. 163 Washington St., N. Y. Send for Catalogue.



NEW PATTERN CUTTER. Will do work equal to any cutter on the market, both on paper machine and in finishing room. . . .

Paper Mill Machinery.

FOURDRINIER AND CYLINDER MACHINES.

Very Substantial and Convenient Designs, Embodying all Late Desirable Improvements.

IRON AND WOOD TUB BEATING ENGINES.

Wet Machines, Rag Cutters, Duplex and Triplex Stuff and Suction Pumps, Double Suction Water Pumps, Etc., Etc.

ESTABLISHED 1858.

BELOIT IRON WORKS,

BELOIT, WIS., U. S. A.

—Thorough Inspection.—
Insurance against loss or damage to property; also against loss of life and injury by Steam Boiler Explosions.

General Agents.	*Offices.*
THEO. H. BABCOCK, CORBIN & GOODRICH, LAWFORD & McKIM,	New York City, 235 Broadway. Philadelphia, 432 Walnut street. Baltimore, Md., Chamber Commerce.
C. E. ROBERTS,	Boston, Mass., 125 Milk street. Providence, R. I., 39 Weybosset street.
H. M. LEMON, C. C. GARDINER, L. B. PERKINS,	Chicago, Ill., 112 Quincy street. St. Louis, Mo., 319 North 4th street. Hartford, 218 Main street.
W. G. LINEBURGH & SON,	Bridgeport, 2 Sanford Building.
BURWELL & BRIGGS, MANN & WILSON, W. S. HARTIE & SON,	Cleveland, 228 Superior street. San Francisco, 308 Sansome Street. Charleston, S. C., 44 Broad street.
ZOLLARS & McGREW,	Denver, Col., 425 to 436 Mining Exchange Building.
L. V. CLARK & CO., PETER F. PESCUD,	Birmingham, Ala., 110 North 19th st. New Orleans, 246 Gravier street.

THE PAPER COMMISSION CO.,

1775-1780 Old Colony Building, Chicago.

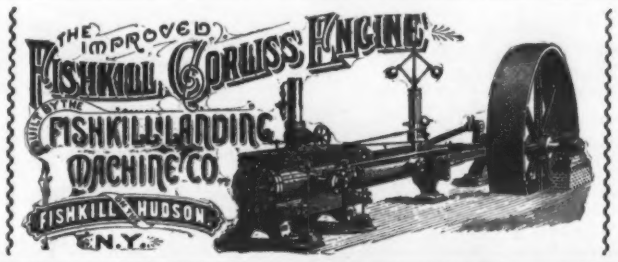
Straw and Rag Wrapping Paper.

- - - - -

A NEW

"CORLISS" ENGINE.

Embodying many marked IMPROVEMENTS, Resulting in the production of the MOST EFFICIENT And ECONOMICAL POWER in the World!



THE "FISHKILL CORLISS" ENGINE

Has the indorsement of many of the leading Manufacturers and great Corporations of the United States, as well as high Testimonials from eminent Engineers.

Also Boilers, Shafting, Pulleys and everything necessary for a complete Steam Power Plant.

65,000,000 GALLONS OF WATER A DAY

Are Purified in PAPER and PULP MILLS by the use of the

A PAPER MAKER'S INVENTION FOR PAPER MAKERS' USE.

WARREN FILTER,

MANUFACTURED BY

CUMBERLAND MFG. CO., Boston.

The Non-Antem Sulphite Digester Co.

310 TEMPLE COURT BUILDING, NEW YORK,

BUILDERS OF

E. MEURER'S

Patent Sulphite Pulp Digester.

THE HUDSON RIVER WATER POWER AND PAPER CO.,

HARTFORD, Conn., June 4, 1894.

THE NON-ANTEM SULPHITE DIGESTER CO.,
310 Temple Court, New York City:

Gentlemen—Previous to purchasing a Sulphite Digester with your lining our superintendent, Mr. Duncan, and myself had looked into a good many kinds of linings for Digesters, and after a very careful and thorough inquiry and investigation we decided that it would be for the best interests of our company to adopt your lining for the large Digester for which we have just contracted.

Yours truly,

THOMAS DUNCAN, Treasurer.

WALDHOF SULPHITE PULP CO.,

MANUFACTURERS OF

SULPHITE WOOD PULP,

Dry, Unbleached and Bleached,

OF ALWAYS EVEN QUALITY.

TRADE MARK.

RUDOLF HELWIG,

Sole Agent for the United States and Canada,

Temple Court Building, - - Cor. Beekman and Nassau Streets, New York.

YOU CAN USE THE AEROPHOR TRADE AEROPHOR MARK. **PAPER DAMPENER**

MANUFACTURED BY

THE U. S. AEROPHOR AIR MOISTENING AND VENTILATING CO., 111 Pine Street, Providence, R. I.

ON ALL YOUR MACHINES AND IMPROVE THE FINISH QUALITY OF YOUR NEWS, BOOK AND MANILLA.

ALDRICH SYSTEM OF DRYING PAPER.

USING LIVE OR EXHAUST STEAM.

86-INCH MACHINE, 35,789 LBS. 24 HOURS.

PAPER IS

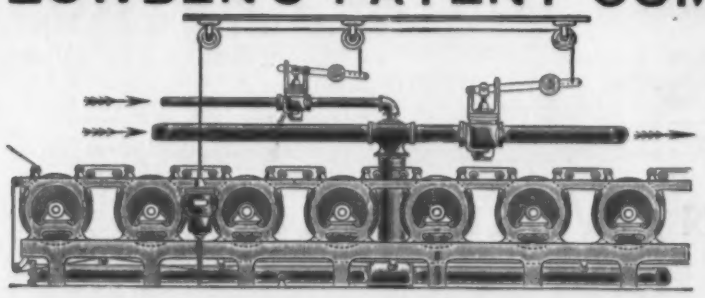
Dried Uniformly.
Dried at Low Temperature if desired.
Dried Fast as Formed on Wet End.
Dried with Minimum Steam.
Dried with Practically no Vapor from the Machine.

Applied to Any Machine; Large or Small Dryers; High or Low Speed, with Guaranteed Increased Production.

WRITE FOR ESTIMATES.

ROSCOE H. ALDRICH, Consulting and Contracting Engineer, **42 Builders' Exchange, Buffalo, N. Y.**

LOWDEN'S PATENT COMBINED EXHAUST AND LIVE STEAM REGULATION.



CAN be applied to paper machines where *exhaust is used or exhaust and direct steam combined, and relieving engine from back pressure* in the operation. Paper can be made with a great saving of steam; it insures uniformity in drying, freedom from water streaks and will go to the calenders in proper condition to produce a handsome finish, which are important points in paper making.

We can refer to numbers of paper makers who have been using these Regulators three to four years on their paper machines.

SEND FOR DESCRIPTIVE CIRCULAR WITH FULL INFORMATION.

JAMES J. LOWDEN

Patentee and Sole Proprietor,

37 LANCASTER STREET, - BOSTON, MASS.

IN DAILY USE IN THE MILLS OF

Royal Pulp and Paper Co.,		East Angus, Quebec.
S. D. Warren & Co.,		Cumberland Mills, Me.
Otis Falls Pulp Co.,	2 Regulators,	Livermore Falls, Me.
Train, Smith & Co.,		Bristol, N. H.
Arms & Thompson Paper Co.,		Bellows Falls, Vt.
Crocker Mfg. Co.,	5 Regulators,	Holyoke, Mass.
Norman Paper Co.,	4 "	" "
Nonotuck Paper Co.,	4 "	" "
Franklin Paper Co.,	3 "	" "
Riverside Paper Co.,	3 "	" "
Lindon Paper Co.,	2 "	" "
Agawam Paper Co.,	3 "	Mittineague, Mass.
Mittineague Paper Co.,	2 "	" "
Lake George Paper and Pulp Co.,		Ticonderoga, N. Y.
Warren Mfg. Co.,		Riegelsville, N. J.
Denver Paper Mills Co.,	2 Regulators,	Denver, Col.
Platte River Paper Mills Co.,	2 "	" "

Residual Chemicals in Paper.*

By Robert Irvine, F. C. S., and G. Sims Woodhead, M. D.; F. R. S. E.

The simultaneous removal of excise restriction from the manufacture of paper and the publication of newspapers form an era in the Victorian age, and the effect which followed was marked by the great increase of newspapers and their circulation, causing an extraordinary demand for increased supplies of paper.

Thirty years ago most, if not all of the paper produced in Great Britain was manufactured from rags, the process then obtaining being the simple and homely one of boiling with weak lyes of soda, followed by the use of bleaching materials in very limited amount. Paper was then practically made up of pure fibre interwoven or felted together. Now cheap papers are a peculiar compound of China clay, stucco and resin, held together by a skeleton of fibrous material obtained from wood, esparto grass or straw, from which the fibre is eliminated only by drastic and costly chemical treatment. Had these new raw materials not been at hand the rag supply of the world would have been insufficient to meet the present wants of Great Britain alone.

As a natural consequence paper fell in price, and expensive chemical operations necessitated the use of cheap loading materials as compensation, while the careful but tedious washing of the fibre or half stuff had either to be partially or wholly done away with.

It is unnecessary for our purpose to enter into the details of this great industry, but a very brief sketch of the modern processes in use will enable us to point out some of the dangers to the stability of paper thus introduced.

RAW MATERIALS.

Esparto grass, wood pulp and straw are now practically the materials used in the construction of paper.

At the present day large quantities of the two former are imported into this country. Esparto, a grass from Spain and the north of Africa; wood in the form of dried pulp, prepared principally in Norway, Sweden and Germany, by acting on it with sulphurous acid and sulphites (and the so-called sulphate of soda), also in some cases by the use of caustic soda. This is supplied to paper makers in a dry condition in the form of coarse, thick sheets of a light brown color.

The esparto or grass consists of a fibrous core surrounded by a sheath of silicious and gummy matter, which is firmly attached to the central portion, and to remove which chemicals (usually caustic soda) are freely used, the amount required being generally 10 per cent. of the weight of grass employed.

ANALYSIS OF ESPARTO GRASS BEFORE TREATMENT WITH SODA.

	Spanish.	African.
Ash	3.72	3.34
Water	9.75	8.45
Water extract	10.68	10.05
Fat, &c.	2.15	2.51
Cellulose	50.19	50.16
Incrusting bodies	27.23	25.85
	103.72	103.34
Less ash	3.72	3.34
	100.00	100.00

BOILING.

During the boiling process much of the gummy and silicious matter is removed by the alkaline lye, to which it gives a deep brown color, while at the same time a portion of the more delicate fibrous matter of the grass is destroyed. (In the case of wood fibre prepared by the sulphite process this treatment is not required.) The boiled material or stuff is reduced to a fibrous magma by suitable machinery; at the same time the yellow coloring matter and the soda are removed as far as possible by washing, but this is often so incomplete that from 1 to 2 per cent. of soda may be found in the washed stuff previous to the

BLEACHING PROCESS.

For this purpose chlorine, in the shape of a solution of chloride of lime, is employed, in quantity varying according to the quality of the material, but the amount is never less than from 3 to 4 per cent. (equal to from 8 to 10 per cent. of dry bleaching powder) of the grass used, and sometimes even more. The action of this bleaching agent is sometimes accelerated and increased by heat or by the addition of sulphuric acid to its solution, which sets free chlorine and its oxidation acids, the bleaching operation thus being performed very quickly (here also there is a definite loss of fibre). The entire removal of such an amount of chlorine from the bleached pulp by washing is a most tedious and difficult operation and requires an extravagant amount of water, such as few ordinary mill supplies could afford. On the other hand, if the chlorine compounds are not entirely removed from the pulp the destruction of the paper within a brief space of its manufacture is certain, hydrochloric acid being formed by a partial breaking down of the cellulose, which destroys its texture. This was a common enough occurrence when the increased demand sprang up consequent upon the remission of the duty, and when thus carelessly prepared the finished paper after being stored for some time became brittle and so lost its textile qualities, falling to pieces on being manipulated, a serious enough matter in a pecuniary sense for the paper maker, but unfortunately much more so in effect when such paper was used for printing valuable books.

To remedy this evil, advantage was taken of the property hyposulphites possess of decomposing hypochlorites. This cheap material could be more profitably used by the paper maker than the enormous waste of water required to remove the last traces of chlorine from the pulp. Indeed the general practice which obtains in the present day often merely provides for getting rid of the chlorinated water from the bleached half stuff by pressing out that which can be removed in this manner and then adding antichlor; subsequent washing with water being either very partial or in some cases almost wholly dispensed with.

We have therefore in many bleached paper pulps the products derived from the action of hyposulphites upon the chlorine compounds; these consist principally of chlorides and sulphates which are in a general sense innocuous, but there is also a notable proportion of finely divided sulphur separated in the process which is precipitated and becomes entangled in the fibres, and is thus transferred to the finished paper. The pulp at this stage is generally alkaline, owing to the presence of unsaturated lime in the bleaching solution.

SIZING.

For this operation alum, or acid aluminous compounds in conjunction with resin soap, are freely used. Printing papers may in consequence give a distinctly acid reaction. In some cases starch is added to the pulp, which during the drying of the paper gives it a fine glossy surface. In such papers it is not impossible that there may be organic acids formed as products of the decomposition of the starch in presence of the water which paper attracts to itself when exposed to the damp atmosphere of our climate; this water generally amounts to one-tenth of its weight.

To counteract the brown tinge which even well bleached grass or wood fibre always retains, ultramarine blue is added to the finished pulp, which (as already stated) is sometimes of an acid character. When this is so, it gives rise to another source of impurity, the ultramarine being decomposed by the acid; sulphur compounds are set free, which are peculiarly disagreeable, owing to the formation of hydrosulphuric acid. In this case also sulphur is separated and is transferred to the finished paper.*

The presence of sulphur and its volatile compounds in ordinary paper may be detected very simply.

A small quantity of the paper under examination (about 1 ounce) is placed in shreds in a glass flask and covered with distilled or rain water. The neck of the flask is loosely plugged with a coil of white blotting paper which has been previously soaked in a solution of (basic) acetate of lead and dried. Gentle heat is applied, but the contents of the flask are not allowed to boil—a watch glass is placed on the top of the plug. In a short time the blackening of the lead compound, owing to the formation of sulphide of lead, will show if sulphur, sulphides or loosely combined sulphur compounds are present.

It is true the amount of sulphur is generally very small, varying from mere traces to 0.5 per cent. in good papers, although it may be present in greater amount in cheap, flimsy newspapers, where obviously it does no particular harm; but where such papers are used for printing books or pamphlets it may give rise to most objectionable results.

The sulphur compounds derived from the use of hyposulphites when that substance is used as an antichlor and those from ultramarine are distinguished in the following manner.

By treating the paper with water alone as described, if sulphur or sulphides derived from hyposulphites are present the plug of acetate of lead soaked paper will become colored by the sulphide of lead formed, rendering it faintly brown or black in color according to the amount present. If no such coloration occurs sulphur or sulphides are absent as derived from hyposulphites.

Of course this test is of value only when papers are neutral or slightly alkaline. If the paper gives an acid reaction the hydrosulphuric acid evolved may be partly or wholly derived from the ultramarine used, but if the paper is neutral and has given no color reaction to the lead paper when heated with water alone, if a few drops of acetic or hydrochloric acid be added to the contents of the flask coloration at once shows.

Some ultramarines are so unstable that even the carbonic acid present in a loosely combined or free condition in hard waters is sufficient to cause decomposition and evolution of hydrosulphuric acid.

When sulphur and linseed oil are brought into contact there ensues a distinct and well-known chemical reaction, the sulphur breaks up the oil and combines with its hydrogen, hydrosulphuric acid being set free.†

As one of the principal uses of paper is that of a printing medium, and as in all the higher classes of printing ink linseed oil is used as a vehicle or medium for the black or other coloring materials used in its manufacture, if free sulphur or sulphides or volatile sulphur compounds are present, the infallible consequence of using such papers for printing purposes is the production of sulphuretted hydrogen and other like products, which impart their characteristic and disagreeable odor to the resulting book or periodical.

We admit that even the most carefully prepared printing inks retain the odor of the materials used in their manufacture, but this is very trifling, and we have become accustomed to associate all printed matter with the not unpleasant balsamic odor of the pressroom, which odor, however, has no relation to the fœtid and disgusting smell which is engendered when sulphur is present in the paper used.

These results seem forcibly to show:

1. That the use of hyposulphites as antichlor, even when the antichlored pulp is thereafter thoroughly washed, is unsafe and a mistake.

2. That the introduction of ultramarine

* From Journal of the Society of Chemical Industry.

* Practical paper makers have realised, to their cost, the trouble free sulphur gives in corroding the wire cloth and the dandy rolls which form such an important and costly portion of the paper machine. The sulphur combines with the copper of the brass wire tissue, forming sulphide of copper, and the wire gauze becomes rotten long before it otherwise should be.

† The so-called vulcanising of linseed oil by this means is a well established process in the arts.

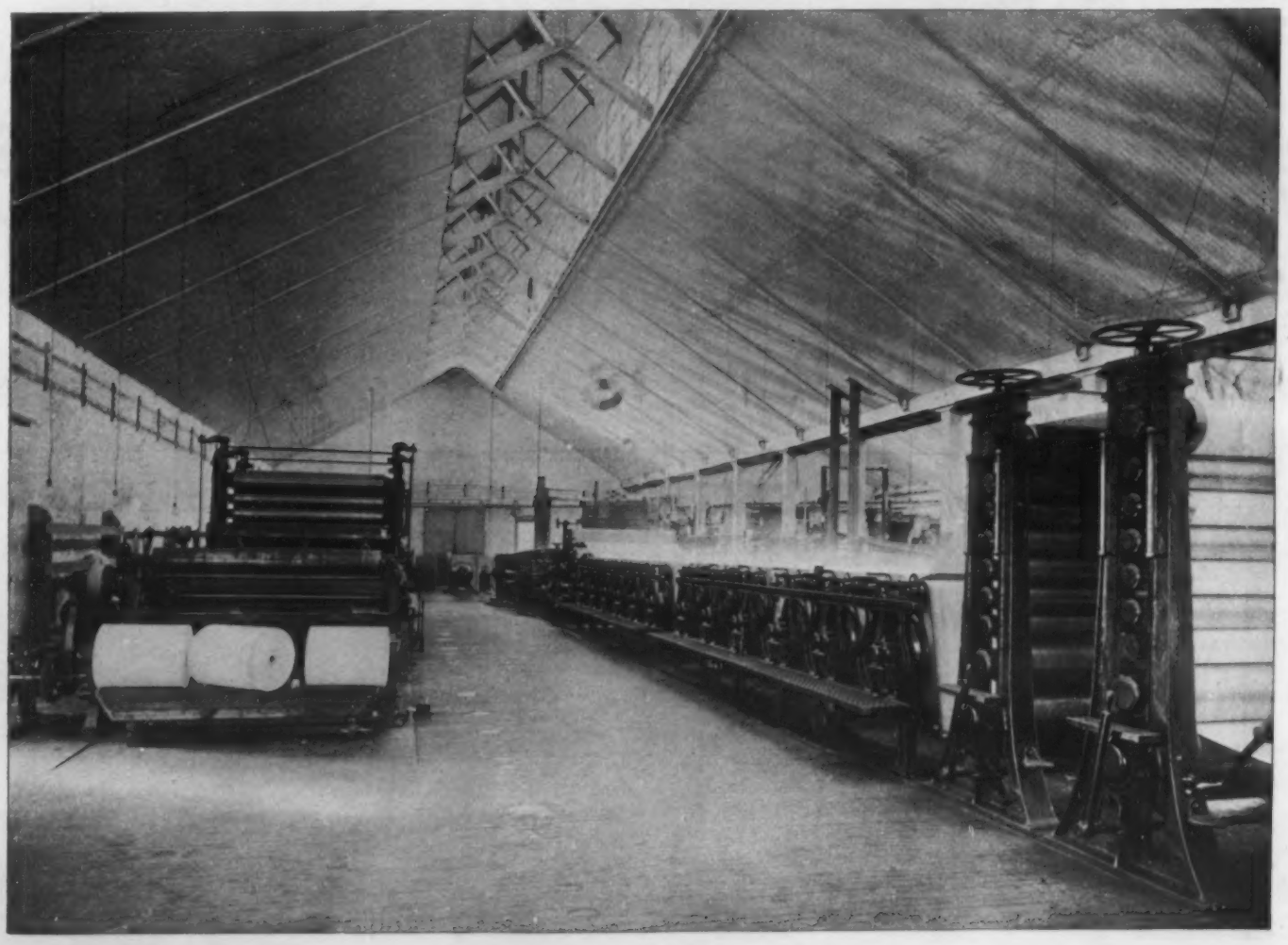
GEORGE M. NEWHALL ENGINEERING CO., LTD.,

ENGINEERS AND ARCHITECTS

FOR

COMPLETE PAPER AND PULP MILLS,

PHILADELPHIA.



NEWHALL MACHINE ROOM ROOF.

WE ALSO OFFER THE TRADE OUR FOLLOWING SPECIALTIES,

all of which are successfully applied and approved by practical Paper and Pulp Makers:

Bleacher for Wood Pulp and Half Stuff,

Dissolver for Bleach,

Evaporator for Soda,

Filter Press for Caustic Liquor,

Machine Room Roof,

Revolving Drainer and Washer for Wood Pulp,

Stuff Chest.

It will pay Paper and Pulp Makers to look into the merits of these new appliances. Photographs, prices and full information furnished upon application.

GEORGE M. NEWHALL ENGINEERING CO., Ltd.,
No. 136 South 4th Street,
PHILADELPHIA.

to "clear" the brown color of the fibre is also unsafe when acid aluminous compounds are used in excess in the sizing operation.

Both substances under certain conditions obtaining in paper manufacture may introduce, proportionately as they are used, sulphur or sulphides into the paper, with the consequences we have mentioned.

The remedy seems simple, and we advise the substitution of sulphites or bisulphites, or even sulphurous acid, for hyposulphites, the same end being gained by their use, these reducing agents destroying the active chlorine compounds without sulphur being precipitated. We understand many paper makers now use sulphites in place of hyposulphites.

The most perfect antichlor for chlorine bleached pulp or cotton cloth would of course be peroxide of hydrogen. Could a cheap method of its preparation be found (there are indications that the present costly process may soon be simplified and cheapened), peroxide of hydrogen would then supersede chlorine, presenting as it does the most perfect bleaching agent known.

As regards the use of ultramarine we would advise the substitution of Prussian or aniline blues (the latter of which, however, is a very unstable color), which cannot under any circumstances give rise to the unpleasant odor of sulphuretted hydrogen emitted by ultramarine when acted upon by even weak acids. The increased cost of these coloring matters will be more than recompensed by their higher tinctorial value. It is true that the ultramarine supplied to paper makers is of the most stable character possible to a pigment into the composition of which alkaline or earthy sulphides enter as an essential part, but it must in any condition be a source of the danger alluded to.

More complex changes than these we have indicated may occur when paper containing starch and sulphur or its volatile compounds is used for printing purposes, and it is not impossible to suppose that evil smelling bodies allied to the mercaptans may be formed, especially if the paper is in mass, as in bound books, and exposed to heat and moisture.

The whole question we have raised is one well worthy of most careful study. The evil we refer to has caused much trouble and inconvience lately, more especially in connection with one of the most widely circulated periodicals of the day, the pages of which some time since smelt very vilely. We investigated the matter, and the smell was undoubtedly traced to the presence of sulphur compounds in the paper used; not that this paper was specially bad in this respect, containing only 0.20 per cent. of free sulphur, yet in this case the general conditions favored the evil. In the case we refer to hyposulphite had undoubtedly been used by the paper maker (who simply followed the course of his forefathers), and where such antichlor is used sulphur must be one of the products.

Of the many samples of paper we have examined we have found "Scotch printings" very free from "antichlor sulphur," but almost invariably we have found all papers to contain a notable quantity of sulphides derived from ultramarine.

We have not referred to the existence of these evils in regard to the high-class writing papers, but we have no doubt they will be found to exist there also.

The smell of paper and printing ink has in the past been "put up with," but the taste of the reading public has now become fastidious in respect to the physical as well as the moral purity of their mental pabulum.

Uncultivated Bast Fibres of the United States.

By Charles Richards Dodge.*

(Continued.)

ABUTILON FIBRE.

A very common malvaceous plant which has been cultivated experimentally in the United States is the Indian mallow (*Abutilon avicennæ*). It is an annual, growing to the height of 4 to 6 feet, though stalks 8 feet or more in length are recorded. Although it has been considered an indigenous species, Gray states that it was introduced from India, and when found growing wild has escaped from cultivation. It is widely distributed North and South, east of the Rocky Mountains, and is found in the State of Washington.

Abutilon fibre is known in the Argentine Republic and other South American countries, where it is called *cañapiña*. Its Chinese name is *Ch'ing Ma*, though its fibre has been exported to England under the common name jute. It has also been called Abutilon hemp, and the name "American jute" was once given it in this country, though this designation would prove very confusing were the true jute ever produced in the United States.

* Report to U. S. Department of Agriculture.

The Indian mallow grows so freely upon any rich soil, even thrusting itself in and growing spontaneously, that it has almost come to be considered a farm pest in many portions of the country. It grows luxuriantly throughout the West and North, the line of States from Ohio to Missouri producing even now vast quantities of the fibre, which rots and goes to waste upon the stalks every year. The fibre is strong, glossy and white, and the ligneous body of the plant gives more cellulose for paper stock than any other species. It has been claimed that fibre extracted from plants that have not reached their maturity will be fine enough to work into yarns for carpet fillings and even fabrics, although I have no doubt the mature fibre, if properly prepared, could be so manufactured. It takes dyes readily, and an advantage is claimed in this respect over our India jute, which is antagonistic to cheap bleaching and dyeing. The fibre was once classified in value between Italian and Manilla hemp, but it will not grade so high, coming nearer to jute, as is proved by its being sold as a variety of jute. The seed of the plant is so hardy that it is not affected by the severest winter, which enables the plant to perpetuate its species in any locality where introduced.

Professor Waterhouse at one time strongly advocated the cultivation of this species for its fibre, to which he gave the name "Bute." Fifteen years ago he wrote as follows:

Abutilon avicennæ seems susceptible of development into a source of public wealth. The plant grows throughout the West in rank and wild luxuriance. It has the spirit and capacity of conquest. With invasive march it has taken possession of large tracts of land. Its tenacity of life and rapid spread render its cultivation a far easier task than extermination. There are to-day in the suburbs of St. Louis stalks of Abutilon 8 feet in height. Unlike Indian jute, Abutilon needs no naturalization. To the manner born, it exhibits a stubborn determination to occupy its heritage.

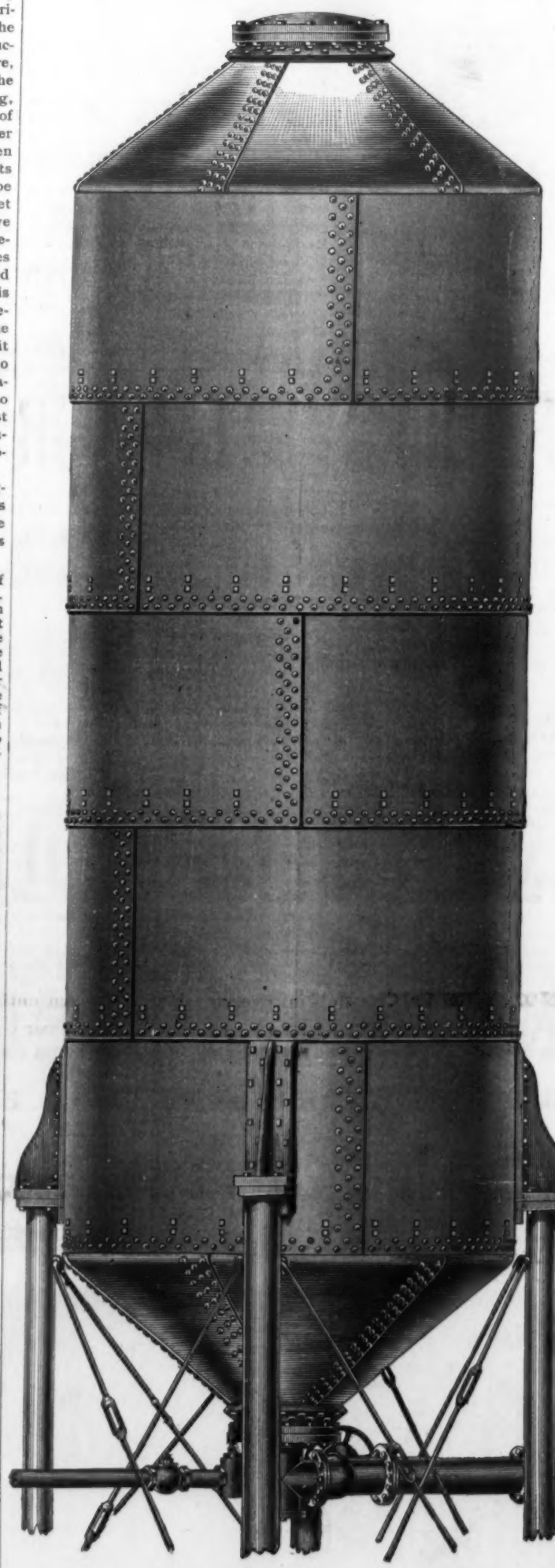
Experiments with Abutilon Avicennæ.

Experiments with the plant in cultivation date back twenty-five years at least, when it attracted considerable attention in the West, particularly in Illinois, through the endeavors of J. H. McConnell to establish the industry. The value of the fibre was demonstrated at that time by its manufacture into twine, rope, &c., and in the report of a State fair committee in 1871 the fibre was given a flattering promise of utility. According to this report the plants are stated to grow 9 to 14 feet high; the seed should be sown 12 to 16 quarts per acre, in corn planting time, in the same manner as hemp; it is cut with a reaper, shocked like hemp till cured, then water rotted like hemp; a volunteer crop will spring up the last of July, which can be dew rotted. The cost of cutting is given at 75 cents per acre; water rotting, $10; dew rotting, $5; hand cleaning, $12; and half as much by machinery, making the total cost, not including rent of land, $19 to $31. Messrs. McConnell offered $100 per ton for all water rotted that could be furnished and $75 for the dew rotted. The crop is not exhausting to the soil if the refuse is restored to it.

Seven or eight years later the plant was the subject of special investigation and experiment in the State of New Jersey, through the endeavors of Samuel C. Brown, Secretary of the Bureau of Labor, Statistics and Industries of that State. A circular was issued in 1878 for the twofold purpose of awakening an interest in the subject of fibre cultivation, and to ascertain what portions of the State were best adapted to its cultivation. While the promoters of these experiments were satisfied that no difficulty existed in the cultivation of the fibre, the enterprise failed completely, notwithstanding the fact that a bounty was offered for the production of the fibre. Since the present fibre investigations of this department were begun I have received from Mr. Brown a communication on the subject which is worthy of note, an extract from which is as follows:

While I did give much attention to the development of fibres from plants indigenous to New Jersey soil, I am sorry there is so little now to show for the time and money expended in that direction. This is largely owing to a lamentable and prevailing lack of interest and spirit of co-operation on the part of the public. A singular and well nigh universal apathy exists still in the cultivators of the soil in respect to the introduction of new industries designed to afford new and diversified employment both to skilled and unskilled labor, which is obviously a pressing need of our time and of various sections of our country. I am just as well satisfied to-day as I was years ago that jute can be made a domestic product, and from India seed naturalized in our Middle and Southern States; moreover, that it can be successfully obtained, as a valuable substitute for the India jute, from the rose mallow and abutilon, which have a wild and luxuriant growth, as you know very well, over the East and West. The want of a cheap mechanical device for decorticating the various fibre producing plants so abundant in our country remains the impediment to the unlimited production of native fibres.

(*To be Continued.*)



The Sulphite Combine

Won't hurt you if you are "in it."

Throw out your old Digesters and get in shape to do business.

There's money in Sulphite, if you handle it well.

You can't handle it well without good machinery.

It's a good thing to buy machinery of men who have made Sulphite.

They know where the trouble lies and how to get around it.

Let us take you by the hand and help you over the rough places.

Consultation free.

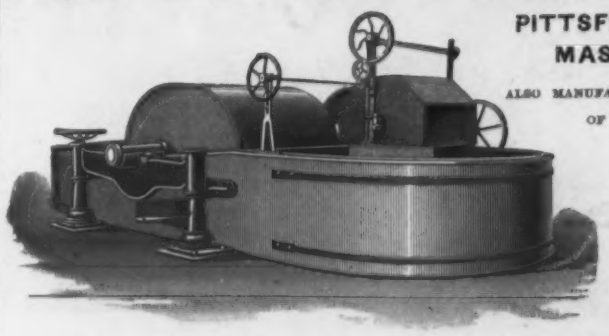
FRIEND-STEBBINS MFG. CO.,

WEST CARROLLTON, OHIO.

E. D. JONES & SONS CO.

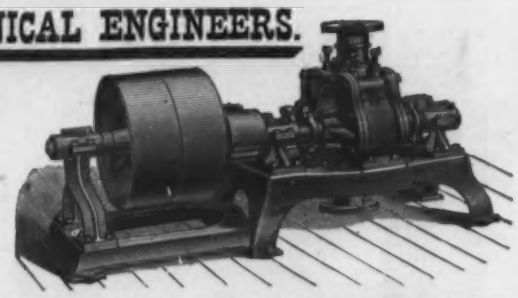
MILLWRIGHTS AND MECHANICAL ENGINEERS.

Paper Mill Plans a Specialty.



PITTSFIELD, MASS.

ALSO MANUFACTURERS OF

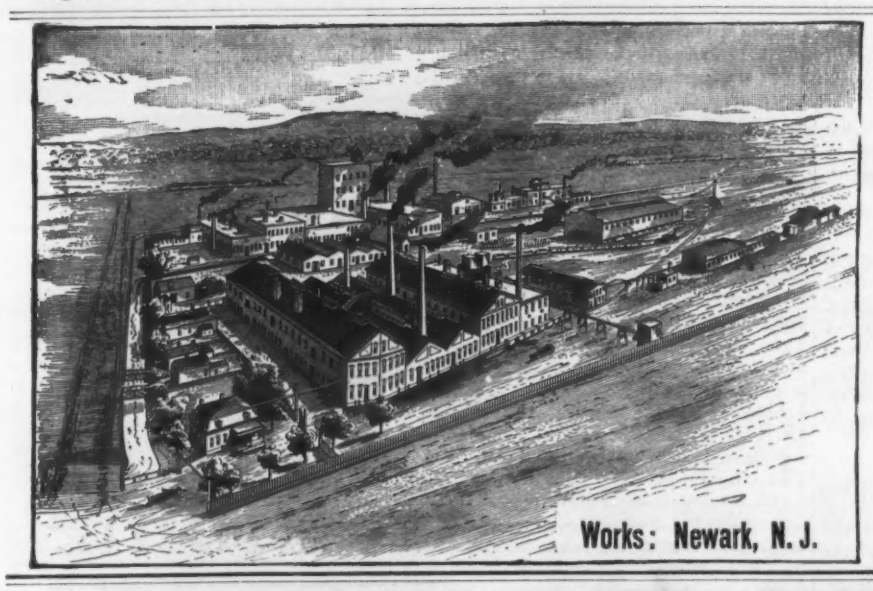


IMPROVED PATENT RAG ENGINES, DUSTERS, ELEVATORS, ETC.

CROCKER'S

Rotary Pumps and Turbine Water Wheels.

SHAFTING, PULLEYS, HANGERS AND GEARING.


Works: Newark, N. J.

THE HELLER & MERZ CO.,

PROPRIETORS OF THE

AMERICAN ULTRAMARINE and GLOBE ANILINE WORKS,

55 MAIDEN LANE, NEW YORK.

Brands for Paper Makers: RC, #4, RSxx, APR, X

ULTRAMARINE FOR PAPER MAKERS.

SUPERIOR QUALITIES.

Aniline Colors of all Shades. Samples Matched.

ANDREW G. PAUL SYSTEM FOR PAPER MACHINES.

IT WILL

AUTOMATICALLY KEEP THE DRYERS FREE FROM AIR AND WATER.
INCREASE THE DRYING CAPACITY OF YOUR MACHINES.
GIVE A UNIFORM TEMPERATURE THROUGHOUT THE CYLINDERS.
CIRCULATE EXHAUST STEAM WITHOUT BACK PRESSURE IN PAPER MACHINES.
CIRCULATE EXHAUST STEAM WITHOUT BACK PRESSURE IN LOFTS AND HEATING CIRCULATIONS.
PROVE ITSELF THE MOST ECONOMICAL SYSTEM OF HEATING BY STEAM.

NEW ENGLAND ENGINEERING COMPANY, 79 Milk St., BOSTON.

THIS SYSTEM CAN BE APPLIED TO ANY PAPER MACHINE. *ESTIMATES FURNISHED FOR APPLYING SAME.*

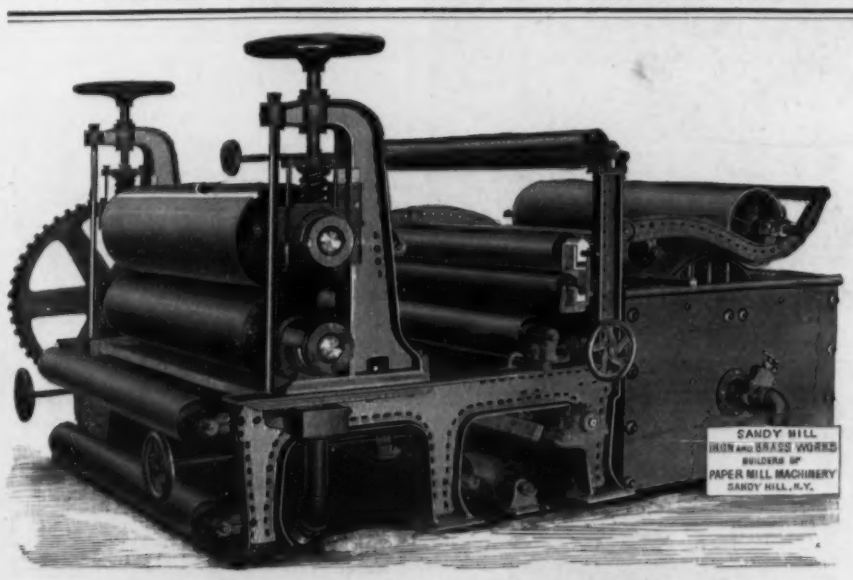
THE RUSSELL CEMENT LINED DIGESTER.

The **Russell Patent** covers every description of Acid Proof Cement Lining and can be applied to any form of Sulphite Digester in use. This Lining for Sulphite Digesters is now in constant operation in many of the largest mills in the country, **more than thirty Digesters being lined with the RUSSELL CEMENT LINING,** and in every case it has given entire satisfaction and proved itself to be a **Perfect Lining.**

IT IS THOROUGHLY ACID PROOF.
IT IS EASILY APPLIED.
IT IS DURABLE AND IMPROVES RATHER THAN DETERIORATES BY USE.
IT PREVENTS RADIATION OF HEAT, AND THUS EFFECTS GREAT SAVING OF STEAM AND INSURES EVEN COOKING OF ENTIRE CONTENTS.
IN THE "ONE METAL" DIGESTER IT PREVENTS CORROSION AND THE DANGEROUS EXPANSION OF THE BRONZE.

Manufacturers of Sulphite Pulp and those intending to build Sulphite Mills are invited to examine into the merits of the *Russell Cement Lining.* Correspondence solicited. All inquiries cheerfully answered,

THE AMERICAN SULPHITE PULP CO., 85 WATER STREET, BOSTON, MASS.



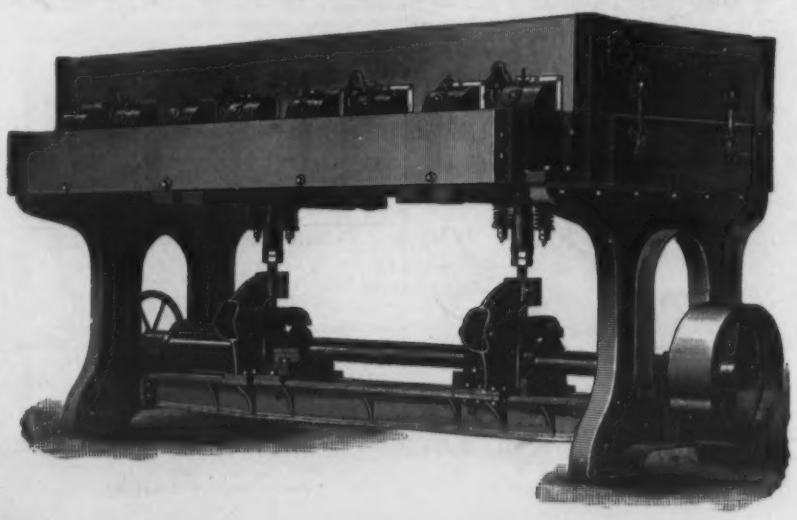
IMPROVED WET MACHINE.

Cut shows our 66 inch Machine, with Brass Cylinder Mold, Rubber Coucher, Spring Pressure Stands, Chilled Iron Bottom and Hard Maple Top Press Rolls, Sprocket Drive. We make this Machine with a Suction Box if desired.

DESCRIPTIVE CIRCULAR MAILED ON APPLICATION.

Sandy Hill Iron and Brass Works,

SANDY HILL, N. Y.



THE MILLIKEN

NOISELESS PULP SCREEN.

SIMPLE, DURABLE, PERFECT, COMPACT.

COMPLETE, NOISELESS, NO STRINGS, LESS POWER.

Plates are sure to last longer, and but two-thirds the number being necessary. No waste of stock when washing up.

Occupies a small space; a simple, solid built flooring the only foundation necessary.
Six (6) hours' time only required to put in position ready for work.
Excellent work accomplished with eight (8) plates and 11-1000 screen plate.
In ordering the Screens no particulars are required.

IT HAS NO EQUAL AS TO SCREENING QUALITIES, CAPACITY AND SAVING OF STOCK.

WARRANTED. THREE MONTHS' TRIAL GIVEN. ADDRESS

C. R. MILLIKEN, PORTLAND, ME.

New Cellulose Derivatives.*

By Clayton Beadle.

Nearly two years ago my colleagues, C. F. Cross and E. J. Bevan and I, when working on the behavior of "mercerized" cellulose toward various reagents, discovered a new class of soluble cellulose derivatives. The ultimate products obtained from these promised to be of so much value and interest that we followed the work up with the greatest possible speed, one of us devoting his whole time to the prosecution of this work. It has resulted in the production of a large range of products, which we have every reason to believe are of great value. Mr. Arthur D. Little has been connected with us in working out the various developments over here. The results obtained by him, we believe, have largely added to the value and scope of our process. We published a brief account (Chem. Soc. J., 1893, 837) of our early work on these compounds and indicated their probable line of developments. (Soc. Chem. Ind. J., June 30, 1893). After nine months' further work we are encouraged in the belief that the predictions we then made are on the eve of fulfillment.

"MERCERIZED" CELLULOSE.

The action of strong solutions of caustic soda upon cellulose has been the subject of study for many years; but the susceptibility of cellulose to interact when so treated has only recently claimed attention. When cellulose (*e. g.*, cotton wool) is treated with a solution of caustic soda containing 15 per cent. NaOH the fibres are seen under the microscope to swell up and increase enormously in diameter, undergoing all sorts of contortions and twistings. The characteristic markings of the fibres are very much intensified, which affords a means of identification. The cell wall absorbs within itself a considerable quantity of the solution. When this mass is washed with water the soda is entirely removed. If pure cellulose be used the weight obtained is somewhat greater than that of the cellulose taken. This effect has long been known as "mercerization."

Mercer, the first to study this, believed it to be due to a combination between the alkali and the cellulose in the ratio of $C_{18}H_{30}O_{15} : 2\,NaOH$. On repeated treatment with alcohol Gladstone has shown that the cellulose retains the soda in the ratio $C_{18}H_{30}O_{15} : NaOH$. The question whether "mercerization" is the result of a chemical union between the cellulose and soda, or the absorption of the soda by the cellulose, resulting in the hydration and gelatinization of the latter, to form a colloid modification, must be left at present unanswered. The soda solution entering en masse into the cell wall, and its easy removal by washing, would lead us to the latter conclusion; but for various reasons which we shall see hereafter it would appear that some sort of a union between the soda and cellulose takes place. Mercerized cellulose when washed and dried is found to correspond with the formula $C_{12}H_{20}O_{10}.H_2O$. The hygroscopic moisture is found to have increased from 6.5 per cent. (the normal figure for cotton cellulose) to 10 per cent. In common with most cellulose hydrates it gives the starch reaction with iodine. This is beautifully demonstrated by placing drops of caustic soda solution of different strengths on Swedish filter paper; after a few minutes, washing the same until free from soda, it is dipped into the iodine solution. The portion treated with caustic soda will be turned deep blue if the soda is up to "mercerizing strength." If the soda used is below this strength a circular fringe of blue will be developed on the edge of the spot where the water has evaporated and so concentrated the soda. This test gives us a means of determining whether the right "degree of mercerization" has been reached.

CELLULOSE BENZOATES.

About three years ago we began to study the reactions of cellulose in presence of strong alkaline solution and obtained cellulose benzoates by shaking with benzoyl chloride. The yields and analyses showed variations between the di and tetra benzoate according to conditions of working. The yield of benzoate is limited, as might be supposed, by the "degree of mercerization." By dissolving certain hydrated modifications of cellulose in caustic soda products of a uniform composition were obtained giving a higher yield of benzoate (*vide supra*). The activity of cellulose in this direction led us to study its behavior in regard to the vapor of carbon bisulphide.

CELLULOSE THIOSULPHOCARBONATES.

We found that when so-called "alkali-cellulose" is treated with carbon bisulphide vapor, at the end of three hours the mass will have changed to a deep golden yellow. This, when treated with water, swells up to a gelatinous mass and finally dissolves, forming a very viscous solution, about the color of treacle. The reaction that takes place may be expressed as follows:

$$X.ONa + CS_2 = CS\begin{cases} OX \\ SNa \end{cases}$$

Alkali-Cellulose. Cellulose Xanthate.

where X represents the reacting unit of cellulose. We have then cellulose-xanthate formed, which is soluble in water, with the formation of the solutions as above described.

COAGULATION.

This solution lasts only for a limited time. In a few days it is found to have set to a solid coagulum which is no longer soluble in water. The action which takes place is simply a reversal of the above or a dissociation of the xanthate, which is readily brought about in presence of water.

$$CS\begin{cases} OX \\ SNa \end{cases} + H_2O = CS_2 + X.OH + NaOH$$

Cellulose Xanthate. Cellulose.

The tendency of the solution to coagulate is conditioned by the amount of water present. Dilution, as might well be supposed, has been found to favor dissociation. The life of the solution is then greatest when the minimum quantity of water is used to bring the xanthate into solution. The color of the solution is chiefly due to the presence of thiocarbonate of soda, which is formed from some of the CS_2 and NaOH splitting off by gradual dissociation.

PROPERTIES OF THE SOLUTION.

Sulphuric and most mineral acids immediately precipitate the cellulose with the evolution of sulphuretted hydrogen. Acetic and many weak organic acids evolve sulphuretted hydrogen without precipitation of cellulose, the solution becoming nearly white and colorless, but much more liable to rapid coagulation. Bisulphite of soda or sulphurous acid decolorizes the solution without the evolution of sulphuretted hydrogen if carefully added. Zinc sulphate or chloride precipitates the zinc salt in horny flakes, which can be washed and easily redissolved in weak soda. Alcohol or brine precipitates the cellulose as thiocarbonate, which can be washed free from by-products and dissolved in water.

VISCOSITY OF SOLUTION.

This solution is very viscous, and very readily undergoes coagulation. The viscosity of the crude solution depends upon many conditions. It is possible to prepare two solutions from the same cellulose, one containing 5 per cent. and the other 20 per cent. of the same viscosity. If the cellulose has been treated with caustic soda some weeks before treatment with CS_2, the viscosity of the solution is very much reduced. Raising the temperature of the alkali-cellulose has the same effect. A solution of greatest viscosity is got by treating with CS_2 immediately after mercerizing. This gives us, when cotton is used in a 7 per cent. solution, a viscosity equal to glycerine, measured by rate of flow.

SPECIFIC GRAVITY OF SOLUTION.

The determination of the specific gravity of solutions of various strengths is not very satisfactory, but it clearly indicates that the specific gravity decreases with decreased viscosity, due to increased age of alkali-cellulose.

EFFECT OF TEMPERATURE.

Increased temperature shortens the life of the solution by inducing coagulation. A solution that would last forty days at 35° Fahr. would coagulate in twenty-five days at 47° Fahr., or in six days at 65° Fahr. When a solution is spread on the surface of glass and exposed to a temperature of about 250° Fahr. the coagulation takes only a few minutes. This, when washed free from by-products, comes off the surface as a transparent film.

EFFECT OF MASS.

Mass has a great influence on coagulation; a small sample of 30 grams coagulates much sooner than a 400 pound lot of the same solution when both are kept at the same temperature.

AIR AND CARBONIC ACID.

Coagulation is induced by exposure to the air, probably due to the presence of carbonic acid, which is found to aid dissociation of the cellulose thiocarbonate, by forming sodium carbonate and liberating CS_2.

PROPERTIES OF COAGULUM.

A solution when once coagulated, although it retains the water required for its solution, is no longer soluble. If a coagulum contains much under 10 per cent. of cellulose it will contract on itself, retaining the form in which it was cast and separating from the water and soluble by products until it contains about 10 per cent. of cellulose and 90 per cent. of water. On the other hand, if the coagulum contains a high percentage of cellulose it will expand and take up water. This coagulum will not dehydrate by treatment with alcohol. At this point it remains in a state of equilibrium so long as it is kept immersed in water. When the washed coagulum is taken out of the water and placed in air, by a gradual process of integration, the mass gradually contracts on itself until the whole of the water is eliminated. The resulting material is a hard, compact, horny substance, having a specific gravity of 1.5.

DECOLORIZED ACETIC ACID SOLUTION.

The crude thiocarbonate solution, when decolorized by the addition of suitable reagents, shows some marked peculiarities. When acetic acid is added, sufficient to render the solution just acid, on standing for some time the solution will have increased in viscosity and developed a marked alkaline reaction. The acetic acid decomposes the sodium thiocarbonate present in the solution, and, as dissociation proceeds, CS_2 is given off and caustic soda formed. If a non-viscous solution has been used the viscous form can be induced by this method. The solutions coagulate a few hours after the addition of the acids unless kept very cool, and are more stable in dilute than in strong solution. A fresh coagulum from a strong solution can be rendered soluble by the addition of water and agitation, and the life can be extended for a considerable time by adding successive quantities of water at regular intervals and agitating. Alum may be used in place of acetic acid.

EFFECT OF SULPHUROUS ACID ON SOLUTION.

When sulphurous acid solution or sodium bisulphite is used in place of the above, the behavior is somewhat different. The sulphur compounds are for the most part converted into thiosulphate, and we have a more permanent solution. The influence of mass is here very much marked. On placing the solution in tubes of different diameters, the smallest coagulates first, and so on, in order of diameter. The life of the solution is about thirty hours in small quantities, but it can be kept for six days in large quantities at the same temperature. It is more stable in dilute solution and the fresh coagulum is readily dissolved by ammonia.

PRODUCTS PURIFIED BY ALCOHOL OR BRINE.

The product got by purification with alcohol or brine is found on analysis to contain less sulphur and soda than the crude material, and by repeated treatment these may be got down to one-tenth their former quantity, but are found to bear about the same ratio to each other. As the S and Na_2O diminish, the solutions are found to be more viscous and less stable. It appears that the reacting unit of cellulose is not constant, and that the molecule may be at least $4(C_{12}H_{20}O_{10})$. The fact that 2 parts of cellulose in 1,000 parts of water, as a decolorized solution, will coagulate without change of volume, leads us to believe that the molecular weight of this cellulose is very high.

BENZOYL-CHLORIDE REACTION.

When a crude solution is treated with benzoyl-chloride the cellulose is eliminated as a cellulose-benzoate. In view of this fact we may be right in ascribing the following formula to the compound:

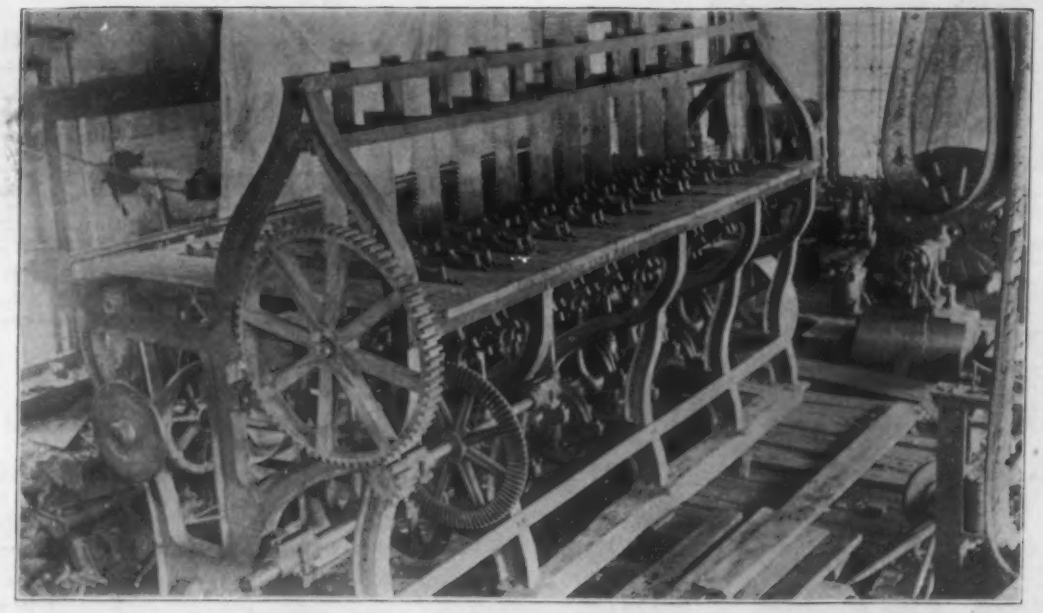
$$CS\begin{cases} OX.ONa \\ SNa \end{cases}$$

X representing a cellulose residue of variable molecular weight and reacting as an alkali cellulose.

(To be Continued.)

When your coal bills are too high look carefully for the cause. It may be the fireman, and probably is if he is a cheap man; or it may be the fuel, and probably is if that is too cheap; or it may be that your furnace needs a slight adjustment to bring it into the best working order for the fuel you are using. Eternal vigilance is the price of economy, and the man who obtains the greatest amount of work with the least amount of coal must know the laws of burning bodies, and above all know every little trick of his own particular fuel and be up in a multitude of wrinkles to help the thing along.—*Power*.

* Read at the stated meeting of the Franklin Institute, April 17, 1894.



A MACHINE FOR CUTTING BLOCKS FROM LOGS FOR PULP, ETC.

Patented at Washington, D. C., April 24, 1894; No. 518,589. Patented at Ottawa, Ont., Canada, July 11, 1894; No. 46,554.

FRANK L. DAY, GLENS FALLS, N. Y.
(INVENTOR.)

DIRECTORY.

Cards under this heading will be charged for at the rate of $15 per annum for each card of three lines or less. Each additional line $5.

Accountants.

WAUD, EDMONDS & PENNEY, Public Accountants and Auditors, 7 Pine st., New York. Work done all over the country. Leading Publishers, Bankers, Merchants and Lawyers as references.

Architects.

BUSS, EDWARD A., Mill Engineer. Specialties: Paper Mill Work and Water Measurements. 85 Water st., Boston, Mass.

TOWER, ASHLEY B., successor to D. H. & A. B. Tower—Designs for Paper and Fibre Mills, Surveys and Plans for Mill Sites. Valuations of Mill Properties, Holyoke, Mass.

Dandy Roll, Fourdrinier & Other Wire Mfrs.

BUCHANAN, BOLT & CO., Patent Seamless Wove and Laid Dandy Rolls Holyoke, Mass.

THE GLEESON WIRE CLOTH MFG. CO., manufacturers of Fourdrinier Wires; Cylinders and Dandy Rolls made and repaired; Cylinders covered at mill; Lettering and Watermarking promptly done. Harrison, N. J.

MALTBY, F. A., Troy, N. Y., Manufacturer of Fourdrinier, Cylinder and Washer Wires. Cylinder and Dandy Rolls recovered.

Jute Butt Brokers.

CABOT, RAY & CO., 81 Water st., New York.

Oils.

DINGEE, M. H., & CO., The Royal Brands of Lubricating Specialties; especially prepared for Paper Mills. 230 Water st., New York.

Paper Bag and Box Machinery.

COTTON, W. W., & SON, 41 Centre st., New York.

Paper Clays.

BARBER, CHAS. B., 5 Beekman st., New York.

SERGEANT BROS., 132 Nassau st., New York.

Paper and Paper Makers' Supplies.

CLARK, CHARLES S., News Paper in Rolls for Perfecting Presses; Book, Plate and Chromo Paper. Potter Building, 38 Park row, New York.

HEWITT, C. B. & BROS., Printing, Wrapping Building Papers. 48 Beekman st., New York.

HULBERT, H. C., & CO., 53 Beekman st., N. Y.

MURPHY, JOHN J., 47 John and 5 Dutch sts., N. Y.

Paper Makers' Felts and Jackets.

BOYNTON & WAGGONER, Manufacturers of Paper Makers' Felts and Jackets, E Aurora, N. Y.

Paper Makers' and Paper Stainers' Colors.

HUBER, J. M., Manufacturer and Importer of Carmine, Pulp Colors, Orange Mineral, Ultramarine, Paper Blue. 239 Front st., New York.

Paper Making Machinery.

GAGE, JOHN E., Automatic Steam Regulators for Dryers; Barry's patent. Waterford, N. Y.

Paper Manufacturers.

DIAMOND MILLS PAPER CO., White and Colored Tissues, Copying Paper, 44 Murray st., N. Y. Send for Samples of the new "Mikado" Tissue Paper.

FIELD, F. S., & CO., 106 Fulton st., New York

JERSEY CITY PAPER CO., Fourdrinier Tissues, White, Colored and Copying; Roll Tissues, all widths, to order, Cornelison ave. and Montgomery st., Jersey City, N. J.

ORIENT CARD AND PAPER CO., Pawtucket, R. I., Enameled Lithographic Papers, Plate Papers, Chromo Boards, Glazed Papers, Cardboards, Lithograph and Varnish Label Papers.

ORRS & CO., Printing and Hanging Mills at Troy. Roll Papers a Specialty. Office, 132 Nassau st., N. Y.

STOEVER, CHAS. M. & CO., Manufacturers of and Dealers in Book, News, Writing and Manilla Writing and Wrapping Papers. 320 Minor st., Phila.

Printed Wrapping Paper.

O'KEEFE, THOS. A., Printed Wrapping, 48 and 50 Duane st., New York

Rags, Paper and Paper Stock.

ATTERBURY BROS., 140 Nassau st., New York.

BOYLE, LUKE, 200 South Fifth ave., New York.

DARMSTADT & SCOTT, 257 Front st., New York.

ELLIOT, A. G., & CO., Paper and Paper Stock, 32 and 34 South Sixth st., Philadelphia, Pa.

FITZGERALD, J. M., 135 & 137 So. Fifth ave., N. Y.

FLYNN, MICHAEL, 61 Congress st., B'klyn, N. Y.

HILLS, GEO. F., 24, 24 and 26 Roosevelt st., N. Y.

HUGHES BROS., 60-66 N. Second st., B'klyn, N. Y.

LIBMANN, JOSEPH, & CO., New Rags a Specialty, 191 and 193 South Fifth ave., N. Y.

LIVERPOOL MARINE STORE CO., Liverpool, England. L. M. S. Brand, Manilla, Rope and Star Brand.

LYON, JOHN H., & CO., 10 and 12 Reade st., N. Y.

McGUIRE, MICHAEL, 100 and 102 Tenth ave, N. Y.

McQUADE, ARTHUR J., 535 & 537 E. 13th st., N. Y.

METZ, PHILIP. 49 Ann st., New York.

OVERTON, R. H., & SON, 104 Times Bldg, N. Y.

PIONEER PAPER STOCK CO., Packers and Graders of Paper Stock, 322 & 324 S. Desplaines st. and 105 and 107 Law ave., Chicago. PERRY KRUS, Pres't.

RAU, G., Times Building, Rooms 112 and 113, N. Y.

SERGEANT BROS., 132 Nassau st., New York.

SMITH CO., THE JOHN M., 440 Water st., N. Y.

SIMMONS, JOHN, & SON, Wholesale Dealers in Paper and Rags, 28 and 30 Decatur st., Phila., Pa.

WARD, OWEN, & SONS, 448 & 450 W. 39th st., N. Y.

Screen Plate Manufacturers and Repairers.

APPLETON SCREEN PLATE CO., Manufacturers and Repairers of Rolled Brass and Cast Metal Screen Plate. For accuracy of work, durability of metal and price, our Plates cannot be surpassed. Write for prices, Appleton, Wis.

HARDY & PINDER, Manufacturers of Patent Cast Metal Sectional Screen Plates, Fitchburg, Mass.

Sealing Wax.

BROWNE, M. C.—Especially for Paper Mills and Wholesale Paper Dealers. Holyoke, Mass.

Straw Boards.

AMERICAN STRAW BOARD CO., 102, 104 and 106 Wooster st., New York.

Toilet Paper Manufacturers.

SWIFT, M. A., & SON, Sheet and Roll Toilet. Write for Samples and Prices. Correspondence solicited. 15 Exchange st., Boston, Mass.

Waxed Papers.

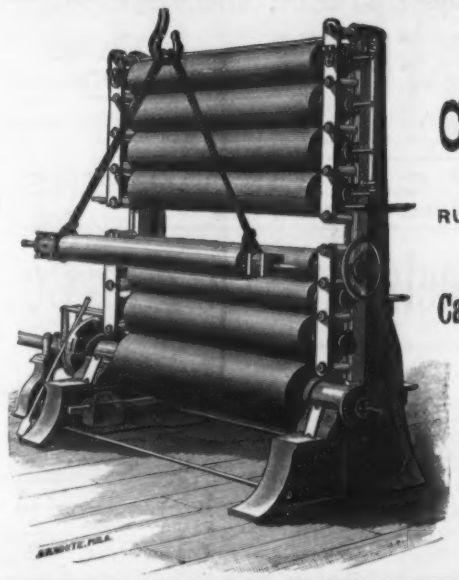
THE HAMMERSCHLAG MFG. CO., Manufacturers of Waxed Paper, 232, 234 and 236 Greenwich st., New York.

THE SPARKS MFG. CO., White and Manilla Tissue and Waxed Paper. Hamburg, Sussex Co., N. J. New York Office, 105 Hudson st.

Wood Pulp Grindstones.

WOOD, WALTER R., 17 Broadway, New York. "Acme" English Wood Pulp Grindstones.

LOBDELL CAR WHEEL COMPANY,



Wilmington, Del., U. S. A.,

MANUFACTURERS OF

CHILLED ROLLS

For Paper Machines,

RUBBER, BRASS, COPPER, FLOUR, OIL AND INK MILLS, ETC.

Calenders Furnished Complete,

WITH PATENT OPEN FACE HOUSINGS so arranged that any roll can be removed without disturbing the others in the stack.

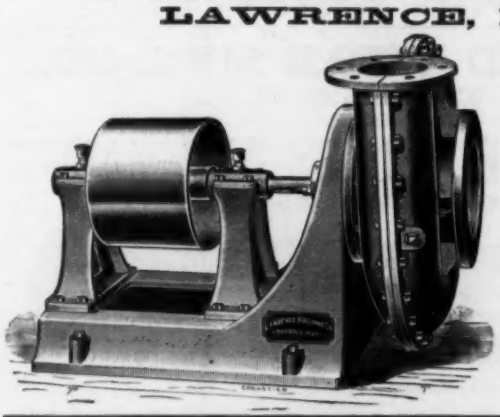
ROLLS SUPPLIED FINISHED OR TURNED FOR GRINDING.

ROLLS BORED FOR STEAM OR CAST HOLLOW.

ROLLS OF ALL KINDS REGROUND.

THE LAWRENCE MACHINE CO.

LAWRENCE, MASS.



Improved Double Suction Centrifugal Pumps,

IN IRON, BRASS OR BRONZE.

VERTICAL HIGH SPEED STEAM ENGINES,

SIZES, 2 to 25 H. P.

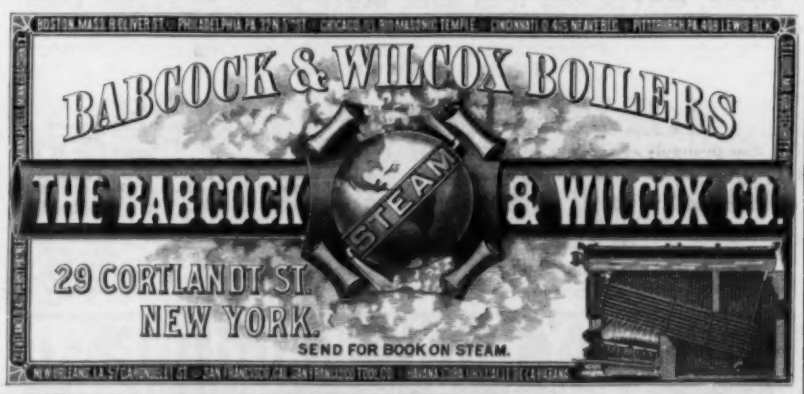
Bronze Valves and Special Fittings for Sulphite Pulp and Paper Mills.

Contractors for Special Machinery.

ALSO

NEW IMPROVED SIDE SUCTION PUMPS.

Write for Catalogue D.


BOSTON, MASS. 6 OLIVER ST.
PHILADELPHIA, PA. 7TH & THOMPSON STS.
CHICAGO, ILL. 810 MASONIC TEMPLE
CINCINNATI, O. 415 NEAVE BLK.
PITTSBURGH, PA. 468 LEWIS BLK.
BABCOCK & WILCOX BOILERS
THE BABCOCK
STEAM
& WILCOX CO.
29 CORTLANDT ST.
NEW YORK.
SEND FOR BOOK ON STEAM.
NEW ORLEANS, LA. 57 CAMP ST.
SAN FRANCISCO, CAL. 327 MARKET ST.
LONDON, ENG. 1 QUEEN VICTORIA ST. E.C.

For Mining and Concentrating Works, Coal, Stone and Ore Screens, Gas and Water Works, Clay and Sand Screens, &c.

For Paper, Woolen, Oil and Flour Mills, Strainers, Ventilators, &c. Fixters, Dryers.

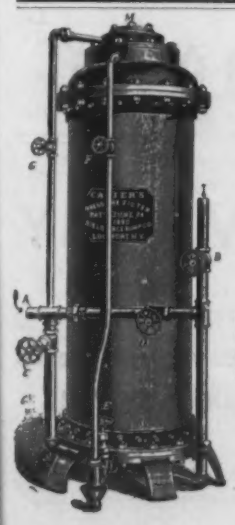
Perforators of All Metals.

PAPER MILL WORK A SPECIALTY. **Perforated Iron, Copper and Brass** for Vats and Drainer Bottoms, Washers, Pulp Screens, False Bottoms, Stock Boilers, both Rotary and Stationary: Sand Traps, Button Catchers, **Suction Box Covers**, Shower Pipes, &c., &c. **Screens and Filter Plates, Perforated Tin and Brass of all sizes.** Iron, Steel, Copper, Brass and Zinc punched to any size and thickness required. ☞ CORRESPONDENCE SOLICITED. SATISFACTION GUARANTEED.

THE HARRINGTON & KING PERFORATING CO.,

MAIN OFFICE AND WORKS: 234 and 236 North Union St., CHICAGO, ILL.

EASTERN OFFICE: 284 Pearl St., cor. Beekman, NEW YORK.



THE CARTER

Pressure Water Filter and

PURIFIER,

ESPECIALLY DESIGNED FOR PURIFYING WATER FOR

PAPER AND PULP MILLS.

Built on scientific principles, embracing all recent advancement in the purification of water. The pressure is even and equal on all parts of the filter bed. It is the only Filter having a central cylinder for the inflow of water, and the most perfect self washing Filter on the market.

CORRESPONDENCE SOLICITED.

Address, **FIELD FORCE PUMP CO.,**

LOCKPORT, N. Y.

LEVIATHAN BELTING.

Unsurpassed for Strength, Durability and Traction Power.

Made any length, width and strength. Guaranteed to run straight. Even throughout. Unaffected by heat, steam or water.

BELTS FOR MAIN DRIVING AND WORK OF A HEAVY NATURE A SPECIALTY.

MAIN BELTING COMPANY,

SOLE MANUFACTURER,

1219-1235 Carpenter Street, Philadelphia.
248 Randolph Street, Chicago.
120 Pearl Street, Boston.

AMOS H. HALL'S

Cedar Vat & Tank Factory,

North Second Street, above Cambria.

PHILADELPHIA, PA.

ESTIMATES PROMPTLY FURNISHED.

Drainers, Stuff Chests, Broken Tubs, Straw Kettles, Boiling and Size Tubs, Water Tanks, &c.,

FOR PAPER MANUFACTURERS.

Down-Town Office: 140 Chestnut St., cor. Second.

SPECIAL NOTICE.

Hofmann's Treatise ON Paper Making.

IN 1873—twenty-one years ago—Carl Hofmann first published his *TREATISE ON PAPER MAKING.* He was then, and for some years had been, a practical paper maker in America. His experience in the trade abroad, as well as in this country, and his technical education and knowledge enabled him to be specially adapted for the work; hence "Hofmann's Treatise on Paper Making" took high rank at the start, and soon became *a* standard work on the subject throughout the world. It was published in English, German and French, and had wide sale in all three languages.

As years passed it became *the* standard work, and for the past decade copies have sold at large prices, often as high as $30 each, and occasionally for more money. The original book consisted of 422 pages, 8¼ by 11 inches in size.

Mr. Hofmann returned to Germany more than eighteen years ago and settled in Berlin. He established *The Papier Zeitung*, and in due course, about seven years ago, began to write his second and latest Treatise. Thus far he has printed and published probably 1,300 pages in German, and in parts of forty-eight pages, including cover, profusely illustrated by wood cuts. When finished the book will consist of about 1,600 pages (pages size same as in first book), illustrated by 1,500 wood cuts.

We have contracted to translate and publish the work in English in twenty parts, of about eighty pages each, at intervals of not less than sixty days, and at a cost of *one dollar cash, in advance, for each and every part.* When the enterprise is completed the twenty parts will sell, *unbound*, for *twenty dollars.* The binding will be extra. Subscribers can themselves have the parts bound, or have us bind them at extra expense; but it should be noted that no money will be saved by waiting until THE TREATISE is completed and bound.

We shall announce within some weeks when "PART ONE" will be ready for delivery.

Orders can be placed now, or later if preferred; and subscribers can send *one dollar* or *six dollars*, which latter would pay for six parts during a year.

We cannot accept any order that is not accompanied by the cash.

Every manufacturer of paper or pulp, every superintendent of a mill, every machine tender, every man whose life-work consists in making or selling paper in the United States, Canada, and all over the world, except Great Britain and the Continent of Europe, should send us his subscription. We will furnish each part postpaid. We will print and ship the English Edition for the European market, but cannot accept orders therefrom.

HOWARD LOCKWOOD & CO.,

Publishers, New York.

CHENEY BIGELOW WIRE WORKS,

SPRINGFIELD, MASS.

Cylinder Molds, Fourdrinier Wires,

DANDY ROLLS,

BRASS, COPPER AND IRON WIRE CLOTH.

CHAS. S. BARTON, President and Treasurer. LEWIS C. STONE, Manager.

RICE, BARTON & FALES MACHINE AND IRON CO.

(At Old Stand of Rice, Barton & Co.),

WORCESTER, MASS.,

—MANUFACTURERS OF—

PAPER MACHINERY,

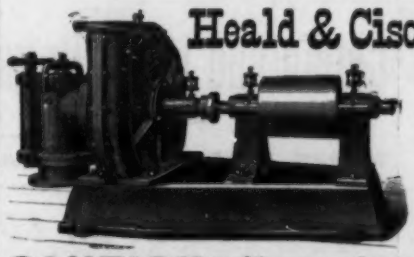
HILL'S PATENT SQUARE AND DIAGONAL CUTTERS,

Iron and Brass Castings, Chilled Iron and Paper Calender Rolls, Rag Engines, Rag Cutters, Steam Pressure Regulators, &c.

HYDRAULIC PRESSES, FROM 5 TO 14 INCH PISTON.

THE OLD RELIABLE

Heald & Cisco Centrifugal Pump.



MORE OF THEM USED BY PAPER MAKERS THAN OF ALL OTHER KINDS COMBINED.

More than EIGHTEEN Thousand in Use.

CAUTION!—Other pump makers are advertising their wares as the "Baldwinsville" Centrifugal Pump. This claim is fraudulent and intended to deceive. We are the only manufacturers of Centrifugal Pumps in Baldwinsville, and we warn all purchasers against parties falsely claiming otherwise.

MORRIS MACHINE WORKS (formerly Heald & Morris), Baldwinsville, N. Y., U. S. A.

RENION & HUBBELL, Agents, 55 and 57 North Clinton Street, Chicago, Ill.

APPLETON WOOLEN MILLS.

MANUFACTURERS OF

PAPER MAKERS FELTS.

The only Mill west of Ohio.

We have demonstrated our ability to compete in

Fourdrinier, Press, Cylinder and Pulp Felts,

and solicit a trial order, especially for writing and book papers.

APPLETON, - - WISCONSIN.

DE WITT-ESTEY WIRE CLOTH WORKS,

NEWARK, - - OHIO.

NEW YORK STORE:
W. S. ESTEY,
71 Fulton Street.

FOURDRINIER WIRES.

Brass and Copper Wire Cloth of Every Description.

BEST QUALITY, HEAVY GRADE, PURE SILK EDGES.

Brass Wire Cloth

For COVERING CYLINDERS and WASHERS.

Dandy Rolls and Cylinders Made and Repaired.

Beware of Imitations.

BEST IN THE WORLD!

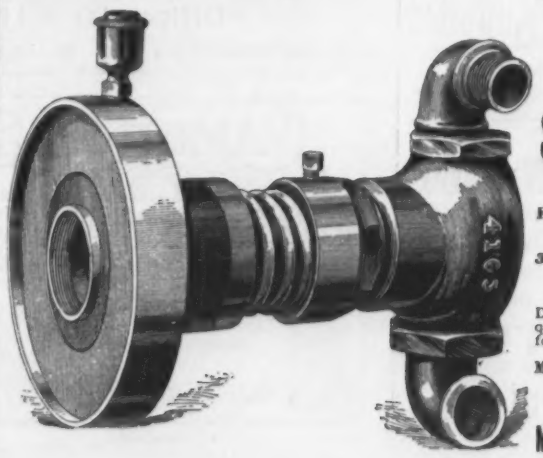
Called the STANDARD, as it is the PACKING by which others are compared.

THE IMPROVED JENKINS BROS. VALVES

Stamped with our Trade Mark

—ARE GENUINE.—

JENKINS BROS., 71 John St., New York. 105 Milk St., Boston. 21 North Fifth St., Philadelphia. 31 North Canal St., Chicago.



The ROACH PATENT METALLIC Steam Joint

Patented May 13, 1884, and Sept. 8, 1885.

For Rotary Paper Dryers and Revolving Cylinders.

3,000 NOW IN USE on PAPER MACHINES.

Does away with Packing the Dryers. No Leakage of Steam. Requires No Attention and will Last for Years.

Medal Awarded at World's Fair.

Send for Circular and Price List.

M. J. ROACH, ANDERSON, IND.

New Cellulose Derivatives.*

By Clayton Beadle.

Nearly two years ago my colleagues, C. F. Cross and E. J. Bevan and I, when working on the behavior of "mercerized" cellulose toward various reagents, discovered a new class of soluble cellulose derivatives. The ultimate products obtained from these promised to be of so much value and interest that we followed the work up with the greatest possible speed, one of us devoting his whole time to the prosecution of this work. It has resulted in the production of a large range of products, which we have every reason to believe are of great value. Mr. Arthur D. Little has been connected with us in working out the various developments over here. The results obtained by him, we believe, have largely added to the value and scope of our process. We published a brief account (Chem. Soc. J., 1893, 837) of our early work on these compounds and indicated their probable line of developments. (Soc. Chem. Ind. J., June 30, 1893). After nine months' further work we are encouraged in the belief that the predictions we then made are on the eve of fulfillment.

"MERCERIZED" CELLULOSE.

The action of strong solutions of caustic soda upon cellulose has been the subject of study for many years; but the susceptibility of cellulose to interact when so treated has only recently claimed attention. When cellulose (*e. g.*, cotton wool) is treated with a solution of caustic soda containing 15 per cent. NaOH the fibres are seen under the microscope to swell up and increase enormously in diameter, undergoing all sorts of contortions and twistings. The characteristic markings of the fibres are very much intensified, which affords a means of identification. The cell wall absorbs within itself a considerable quantity of the solution. When this mass is washed with water the soda is entirely removed. If pure cellulose be used the weight obtained is somewhat greater than that of the cellulose taken. This effect has long been known as "mercerization."

Mercer, the first to study this, believed it to be due to a combination between the alkali and the cellulose in the ratio of $C_{12}H_{20}O_{10} : 3\,NaOH$. On repeated treatment with alcohol Gladstone has shown that the cellulose retains the soda in the ratio $C_{12}H_{20}O_{10} : NaOH$. The question whether "mercerization" is the result of a chemical union between the cellulose and soda, or the absorption of the soda by the cellulose, resulting in the hydration and gelatinization of the latter, to form a colloid modification, must be left at present unanswered. The soda solution entering en masse into the cell wall, and its easy removal by washing, would lead us to the latter conclusion; but for various reasons which we shall see hereafter it would appear that some sort of a union between the soda and cellulose takes place. Mercerized cellulose when washed and dried is found to correspond with the formula $C_{12}H_{20}O_{10}.H_2O$. The hygroscopic moisture is found to have increased from 6.5 per cent. (the normal figure for cotton cellulose) to 10 per cent. In common with most cellulose hydrates it gives the starch reaction with iodine. This is beautifully demonstrated by placing drops of caustic soda solution of different strengths on Swedish filter paper; after a few minutes, washing the same until free from soda, it is dipped into the iodine solution. The portion treated with caustic soda will be turned deep blue if the soda is up to "mercerizing strength." If the soda used is below this strength a circular fringe of blue will be developed on the edge of the spot where the water has evaporated and so concentrated the soda. This test gives us a means of determining whether the right "degree of mercerization" has been reached.

CELLULOSE BENZOATES.

About three years ago we began to study the reactions of cellulose in presence of strong alkaline solution and obtained cellulose benzoates by shaking with benzoyl chloride. The yields and analyses showed variations between the di and tetra benzoate according to conditions of working. The yield of benzoate is limited, as might be supposed, by the "degree of mercerization." By dissolving certain hydrated modifications of cellulose in caustic soda products of a uniform composition were obtained giving a higher yield of benzoate (*vide supra*). The activity of cellulose in this direction led us to study its behavior in regard to the vapor of carbon bisulphide.

CELLULOSE THIOSULPHOCARBONATES.

We found that when so-called "alkali-cellulose" is treated with carbon bisulphide vapor, at the end of three hours the mass will have changed to a deep golden yellow. This, when treated with water, swells up to a gelatinous mass and finally dissolves, forming a very viscous solution, about the color of treacle. The reaction that takes place may be expressed as follows:

$$X.ONa + CS_2 = CS\begin{matrix}OX\\SNa\end{matrix}$$

Alkali-Cellulose. Cellulose Xanthate.

where X represents the reacting unit of cellulose. We have then cellulose-xanthate formed, which is soluble in water, with the formation of the solutions as above described.

COAGULATION.

This solution lasts only for a limited time. In a few days it is found to have set to a solid coagulum which is no longer soluble in water. The action which takes place is simply a reversal of the above or a dissociation of the xanthate, which is readily brought about in presence of water.

$$CS\begin{matrix}OX\\SNa\end{matrix} + H_2O = CS_2 + X.OH + NaOH$$

Cellulose Xanthate. Cellulose.

The tendency of the solution to coagulate is conditioned by the amount of water present. Dilution, as might well be supposed, has been found to favor dissociation. The life of the solution is then greatest when the minimum quantity of water is used to bring the xanthate into solution. The color of the solution is chiefly due to the presence of thiocarbonate of soda, which is formed from some of the CS_2 and NaOH splitting off by gradual dissociation.

PROPERTIES OF THE SOLUTION.

Sulphuric and most mineral acids immediately precipitate the cellulose with the evolution of sulphuretted hydrogen. Acetic and many weak organic acids evolve sulphuretted hydrogen without precipitation of cellulose, the solution becoming nearly white and colorless, but much more liable to rapid coagulation. Bisulphite of soda or sulphurous acid decolorizes the solution without the evolution of sulphuretted hydrogen if carefully added. Zinc sulphate or chloride precipitates the zinc salt in horny flakes, which can be washed and easily redissolved in weak soda. Alcohol or brine precipitates the cellulose as thiocarbonate, which can be washed free from by-products and dissolved in water.

VISCOSITY OF SOLUTION.

This solution is very viscous, and very readily undergoes coagulation. The viscosity of the crude solution depends upon many conditions. It is possible to prepare two solutions from the same cellulose, one containing 5 per cent. and the other 20 per cent. of the same viscosity. If the cellulose has been treated with caustic soda some weeks before treatment with CS_2, the viscosity of the solution is very much reduced. Raising the temperature of the alkali-cellulose has the same effect. A solution of greatest viscosity is got by treating with CS_2 immediately after mercerizing. This gives us, when cotton is used in a 7 per cent. solution, a viscosity equal to glycerine, measured by rate of flow.

SPECIFIC GRAVITY OF SOLUTION.

The determination of the specific gravity of solutions of various strengths is not very satisfactory, but it clearly indicates that the specific gravity decreases with decreased viscosity, due to increased age of alkali-cellulose.

EFFECT OF TEMPERATURE.

Increased temperature shortens the life of the solution by inducing coagulation. A solution that would last forty days at 35° Fahr. would coagulate in twenty-five days at 47° Fahr., or in six days at 65° Fahr. When a solution is spread on the surface of glass and exposed to a temperature of about 250° Fahr. the coagulation takes only a few minutes. This, when washed free from by-products, comes off the surface as a transparent film.

EFFECT OF MASS.

Mass has a great influence on coagulation; a small sample of 30 grams coagulates much sooner than a 400 pound lot of the same solution when both are kept at the same temperature.

AIR AND CARBONIC ACID.

Coagulation is induced by exposure to the air, probably due to the presence of carbonic acid, which is found to aid dissociation of the cellulose thiocarbonate, by forming sodium carbonate and liberating CS_2.

PROPERTIES OF COAGULUM.

A solution when once coagulated, although it retains the water required for its solution, is no longer soluble. If a coagulum contains much under 10 per cent. of cellulose it will contract on itself, retaining the form in which it was cast and separating from the water and soluble by products until it contains about 10 per cent. of cellulose and 90 per cent. of water. On the other hand, if the coagulum contains a high percentage of cellulose it will expand and take up water. This coagulum will not dehydrate by treatment with alcohol. At this point it remains in a state of equilibrium so long as it is kept immersed in water. When the washed coagulum is taken out of the water and placed in air, by a gradual process of integration, the mass gradually contracts on itself until the whole of the water is eliminated. The resulting material is a hard, compact, horny substance, having a specific gravity of 1.5.

DECOLORIZED ACETIC ACID SOLUTION.

The crude thiocarbonate solution, when decolorized by the addition of suitable reagents, shows some marked peculiarities. When acetic acid is added, sufficient to render the solution just acid, on standing for some time the solution will have increased in viscosity and developed a marked alkaline reaction. The acetic acid decomposes the sodium thiocarbonate present in the solution, and, as dissociation proceeds, CS_2 is given off and caustic soda formed. If a non-viscous solution has been used the viscous form can be induced by this method. The solutions coagulate a few hours after the addition of the acids unless kept very cool, and are more stable in dilute than in strong solution. A fresh coagulum from a strong solution can be rendered soluble by the addition of water and agitation, and the life can be extended for a considerable time by adding successive quantities of water at regular intervals and agitating. Alum may be used in place of acetic acid.

EFFECT OF SULPHUROUS ACID ON SOLUTION.

When sulphurous acid solution or sodium bisulphite is used in place of the above, the behavior is somewhat different. The sulphur compounds are for the most part converted into thiosulphate, and we have a more permanent solution. The influence of mass is here very much marked. On placing the solution in tubes of different diameters, the smallest coagulates first, and so on, in order of diameter. The life of the solution is about thirty hours in small quantities, but it can be kept for six days in large quantities at the same temperature. It is more stable in dilute solution and the fresh coagulum is readily dissolved by ammonia.

PRODUCTS PURIFIED BY ALCOHOL OR BRINE.

The product got by purification with alcohol or brine is found on analysis to contain less sulphur and soda than the crude material, and by repeated treatment these may be got down to one-tenth their former quantity, but are found to bear about the same ratio to each other. As the S and Na_2O diminish, the solutions are found to be more viscous and less stable. It appears that the reacting unit of cellulose is not constant, and that the molecule may be at least $4(C_{12}H_{20}O_{10})$. The fact that 2 parts of cellulose in 1,000 parts of water, as a decolorized solution, will coagulate without change of volume, leads us to believe that the molecular weight of this cellulose is very high.

BENZOYL-CHLORIDE REACTION.

When a crude solution is treated with benzoyl-chloride the cellulose is eliminated as a cellulose-benzoate. In view of this fact we may be right in ascribing the following formula to the compound:

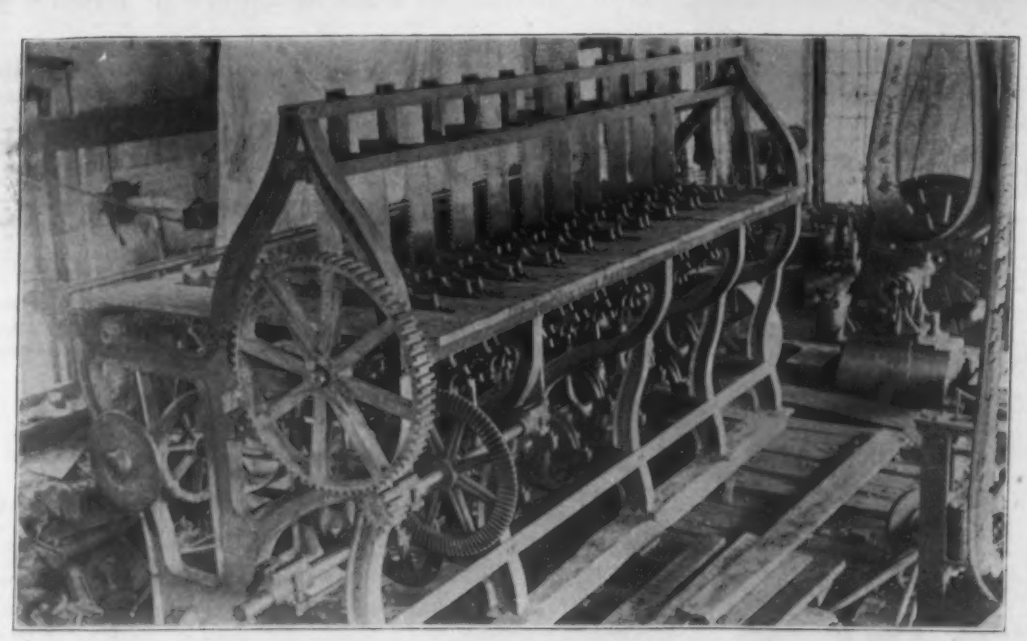
$$CS\begin{matrix}OX.ONa\\SNa\end{matrix}$$

X representing a cellulose residue of variable molecular weight and reacting as an alkali cellulose.

(To be Continued.)

When your coal bills are too high look carefully for the cause. It may be the fireman, and probably is if he is a cheap man; or it may be the fuel, and probably is if that is too cheap; or it may be that your furnace needs a slight adjustment to bring it into the best working order for the fuel you are using. Eternal vigilance is the price of economy, and the man who obtains the greatest amount of work with the least amount of coal must know the laws of burning bodies, and above all know every little trick of his own particular fuel and be up in a multitude of wrinkles to help the thing along.—*Power*.

* Read at the stated meeting of the Franklin Institute, April 17, 1894.



A MACHINE FOR CUTTING BLOCKS FROM LOGS FOR PULP, ETC.

Patented at Washington, D. C., April 24, 1894; No. 518,589. Patented at Ottawa, Ont., Canada, July 11, 1894; No. 46,554.

FRANK L. DAY, GLENS FALLS, N. Y.

(INVENTOR.)

DIRECTORY.

Cards under this heading will be charged for at the rate of $15 per annum for each card of three lines or less. Each additional line $5.

Accountants.

WAUD, EDMONDS & PENNEY, Public Accountants and Auditors, 7 Pine st., New York. Work done all over the country. Leading Publishers, Bankers, Merchants and Lawyers as references.

Architects.

BUSS, EDWARD A., Mill Engineer. Specialties: Paper Mill Work and Water Measurements. 85 Water st., Boston, Mass.

TOWER, ASHLEY B., successor to D. H. & A. B. Tower—Designs for Paper and Fibre Mills, Surveys and Plans for Mill Sites. Valuations of Mill Properties, Holyoke, Mass.

Dandy Roll, Fourdrinier & Other Wire Mfrs.

BUCHANAN, BOLT & CO., Patent Seamless Wove and Laid Dandy Rolls Holyoke, Mass.

THE GLEESON WIRE CLOTH MFG. CO., manufacturers of Fourdrinier Wires; Cylinders and Dandy Rolls made and repaired; Cylinders covered at mill; Lettering and Watermarking promptly done. Harrison, N. J.

MALTBY, F. A., Troy, N. Y., Manufacturer of Fourdrinier, Cylinder and Washer Wires. Cylinder and Dandy Rolls recovered.

Jute Butt Brokers.

CABOT, RAY & CO., 81 Water st., New York.

Oils.

DINGEE, M. H., & CO., The Royal Brands of Lubricating Specialties; especially prepared for Paper Mills. 239 Water st., New York.

Paper Bag and Box Machinery.

COTTON, W. W., & SON, 41 Centre st., New York.

Paper Clays.

BARBER, CHAS. B., 5 Beekman st., New York.

SERGEANT BROS., 132 Nassau st., New York.

Paper and Paper Makers' Supplies.

CLARK, CHARLES S., News Paper in Rolls for Perfecting Presses; Book, Plate and Chromo Paper. Potter Building, 38 Park row, New York.

HEWITT, C. B. & BROS., Printing, Wrapping Building Papers. 48 Beekman st., New York.

HULBERT, H. C., & CO., 53 Beekman st., N. Y.

MURPHY, JOHN J., 47 John and 5 Dutch sts., N. Y.

Paper Makers' Felts and Jackets.

BOYNTON & WAGGONER, Manufacturers of Paper Makers' Felts and Jackets, E. Aurora, N. Y.

Paper Makers' and Paper Stainers' Colors.

HUBER, J. M., Manufacturer and Importer of Carmine, Pulp Colors, Orange Mineral, Ultramarine, Paper Blue. 239 Front st., New York.

Paper Making Machinery.

GAGE, JOHN E., Automatic Steam Regulators for Dryers; Barry's patent. Waterford, N. Y.

Paper Manufacturers.

DIAMOND MILLS PAPER CO., White and Colored Tissues, Copying Paper, 44 Murray st., N. Y. Send for Samples of the new "Mikado" Tissue Paper.

FIELD, F. S., & CO., 106 Fulton st., New York

JERSEY CITY PAPER CO., Fourdrinier Tissues, White, Colored and Copying; Roll Tissues, all widths, to order, Cornelison ave. and Montgomery st., Jersey City, N. J.

ORIENT CARD AND PAPER CO., Pawtucket, R. I., Enameled Lithographic Papers, Plate Papers, Chromo Boards, Glazed Papers, Cardboards, Lithograph and Varnish Label Papers.

ORRS & CO., Printing and Hanging Mills at Troy. Roll Papers a Specialty. Office, 132 Nassau st., N. Y.

STOEVER, CHAS. M. & CO., Manufacturers of and Dealers in Book, News, Writing and Manilla Writing and Wrapping Papers. 520 Minor st., Phila.

Printed Wrapping Paper.

O'KEEFE, THOS. A., Printed Wrapping, 48 and 50 Duane st., New York

Rags, Paper and Paper Stock.

ATTERBURY BROS., 140 Nassau st., New York.

BOYLE, LUKE, 206 South Fifth ave., New York.

DARMSTADT & SCOTT, 257 Front st., New York.

ELLIOT, A. G., & CO., Paper and Paper Stock, 32 and 34 South Sixth st., Philadelphia, Pa.

FITZGERALD, J. M., 135 & 137 So. Fifth ave., N. Y.

FLYNN, MICHAEL, 61 Congress st., B'klyn, N. Y.

HILLS, GEO. F., 32, 34 and 36 Roosevelt st., N. Y.

HUGHES BROS., 60-66 N. Second st., B'klyn, N. Y.

LIBMANN, JOSEPH, & CO., New Rags a Specialty, 191 and 193 South Fifth ave., N. Y.

LIVERPOOL MARINE STORE CO., Liverpool, England. L. M. S. Brand, Manilla, Rope and Star Brand.

LYON, JOHN H., & CO., 10 and 12 Reade st., N. Y.

McGUIRE, MICHAEL, 100 and 102 Tenth ave, N. Y.

McQUADE, ARTHUR J., 535 & 537 E. 13th st., N. Y.

METZ, PHILIP, 49 Ann st., New York.

OVERTON, R. H., & SON, 104 Times Bldg, N. Y.

PIONEER PAPER STOCK CO., Packers and Graders of Paper Stock, 222 & 224 S. Desplaines st. and 105 and 107 Law ave., Chicago. PERRY KRUS, Pres't.

RAU, G., Times Building, Rooms 112 and 113, N. Y.

SERGEANT BROS., 132 Nassau st., New York.

SMITH CO., THE JOHN M., 440 Water st., N. Y.

SIMMONS, JOHN, & SON, Wholesale Dealers in Paper and Rags, 28 and 30 Decatur st., Phila., Pa.

WARD, OWEN, & SONS, 448 & 450 W. 39th st., N. Y.

Screen Plate Manufacturers and Repairers.

APPLETON SCREEN PLATE CO., Manufacturers and Repairers of Rolled Brass and Cast Metal Screen Plate. For accuracy of work, durability of metal and price, our Plates cannot be surpassed. Write for prices, Appleton, Wis.

HARDY & PINDER, Manufacturers of Patent Cast Metal Sectional Screen Plates, Fitchburg, Mass.

Sealing Wax.

BROWNE, M. C.—Especially for Paper Mills and Wholesale Paper Dealers. Holyoke, Mass.

Straw Boards.

AMERICAN STRAW BOARD CO., 102, 104 and 106 Wooster st., New York.

Toilet Paper Manufacturers.

SWIFT, M. A., & SON, Sheet and Roll Toilet. Write for Samples and Prices. Correspondence solicited. 15 Exchange st., Boston, Mass.

Waxed Papers.

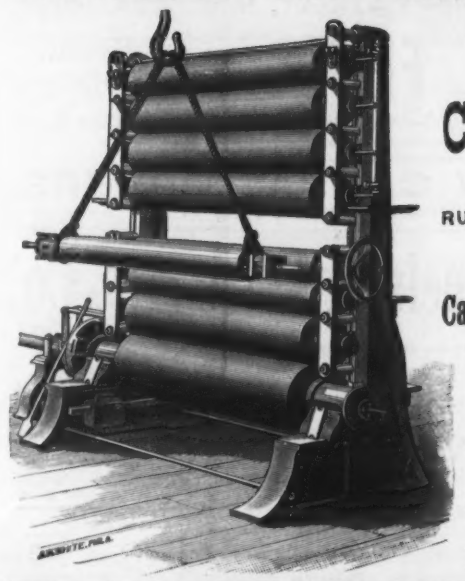
THE HAMMERSCHLAG MFG. CO., Manufacturers of Waxed Paper, 232, 234 and 236 Greenwich st., New York.

THE SPARKS MFG. CO., White and Manilla Tissue and Waxed Paper. Hamburg, Sussex Co., N. J. New York Office, 105 Hudson st.

Wood Pulp Grindstones.

WOOD, WALTER R., 17 Broadway, New York. "Acme" English Wood Pulp Grindstones.

LOBDELL CAR WHEEL COMPANY,



Wilmington, Del., U. S. A.,

MANUFACTURERS OF

CHILLED ROLLS

For Paper Machines,

RUBBER, BRASS, COPPER, FLOUR, OIL AND INK MILLS, ETC.

Calenders Furnished Complete,

WITH PATENT OPEN FACE HOUSINGS so arranged that any roll can be removed without disturbing the others in the stack.

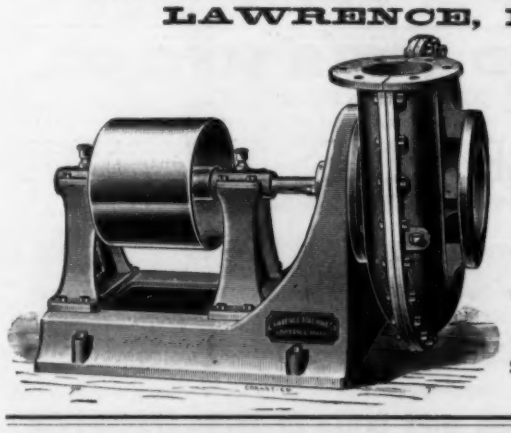
ROLLS SUPPLIED FINISHED OR TURNED FOR GRINDING.

ROLLS BORED FOR STEAM OR CAST HOLLOW.

ROLLS OF ALL KINDS REGROUND.

THE LAWRENCE MACHINE CO.

LAWRENCE, MASS.



Improved Double Suction Centrifugal Pumps,

IN IRON, BRASS OR BRONZE.

VERTICAL HIGH SPEED STEAM ENGINES,

SIZES, 2 to 25 H. P.

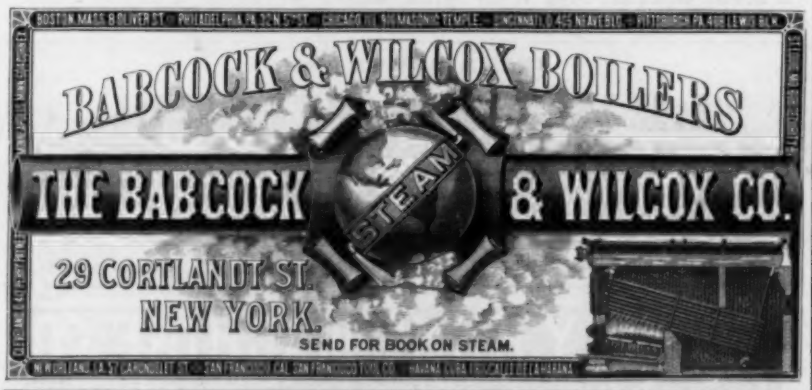
Bronze Valves and Special Fittings for Sulphite Pulp and Paper Mills.

Contractors for Special Machinery.

ALSO

NEW IMPROVED SIDE SUCTION PUMPS.

Write for Catalogue D.



For Mining and Concentrating Works, Coal, Stone and Ore Screens, Gas and Water Works, Clay and Sand Screens, &c.

For Paper, Woolen, Oil and Flour Mills, Fixtures, Strainers, Ventilators, &c.

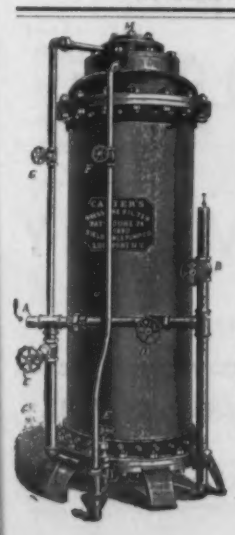
Perforators of All Metals.

PAPER MILL WORK A SPECIALTY. Perforated Iron, Copper and Brass for Vats and Drainer Bottoms, Washers, Pulp Screens, False Bottoms, Stock Boilers, both Rotary and Stationary; Sand Traps, Button Catchers, Suction Box Covers, Shower Pipes, &c., &c. Screens and Filter Plates, Perforated Tin and Brass of all sizes. Iron, Steel, Copper, Brass and Zinc punched to any size and thickness required. ☞ CORRESPONDENCE SOLICITED. SATISFACTION GUARANTEED.

THE HARRINGTON & KING PERFORATING CO.,

MAIN OFFICE AND WORKS: 224 and 226 North Union St., CHICAGO, ILL.

EASTERN OFFICE: 284 Pearl St., cor. Beekman, NEW YORK.



THE CARTER

Pressure Water Filter and

PURIFIER,

ESPECIALLY DESIGNED FOR PURIFYING WATER FOR

PAPER AND PULP MILLS.

Built on scientific principles, embracing all recent advancement in the purification of water. The pressure is even and equal on all parts of the filter bed. It is the only Filter having a central cylinder for the inflow of water, and the most perfect self washing Filter on the market.

CORRESPONDENCE SOLICITED.

Address, **FIELD FORCE PUMP CO.,**

LOCKPORT, N. Y.

LEVIATHAN BELTING.

Unsurpassed for Strength, Durability and Traction Power.

Made any length, width and strength. Guaranteed to run straight. Even throughout. Unaffected by heat, steam or water.

BELTS FOR MAIN DRIVING AND WORK OF A HEAVY NATURE A SPECIALTY.

MAIN BELTING COMPANY,

SOLE MANUFACTURER,

1219-1235 Carpenter Street, Philadelphia.
248 Randolph Street, Chicago.
120 Pearl Street, Boston.

AMOS H. HALL'S

Cedar Vat & Tank Factory,

North Second Street, above Cambria.

PHILADELPHIA, PA.

☞ ESTIMATES PROMPTLY FURNISHED.

☞ ESTIMATES PROMPTLY FURNISHED.

Drainers, Stuff Chests, Broken Tubs, Straw Kettles, Boiling and Size Tubs, Water Tanks, &c.,

FOR PAPER MANUFACTURERS.

Down-Town Office: 140 Chestnut St., cor. Second.

SPECIAL NOTICE.

Hofmann's Treatise ON Paper Making.

IN 1873—twenty-one years ago—Carl Hofmann first published his ***TREATISE ON PAPER MAKING.*** He was then, and for some years had been, a practical paper maker in America. His experience in the trade abroad, as well as in this country, and his technical education and knowledge enabled him to be specially adapted for the work; hence "Hofmann's Treatise on Paper Making" took high rank at the start, and soon became *a* standard work on the subject throughout the world. It was published in English, German and French, and had wide sale in all three languages.

As years passed it became *the* standard work, and for the past decade copies have sold at large prices, often as high as $30 each, and occasionally for more money. The original book consisted of 422 pages, 8¼ by 11 inches in size.

Mr. Hofmann returned to Germany more than eighteen years ago and settled in Berlin. He established *The Papier Zeitung*, and in due course, about seven years ago, began to write his second and latest Treatise. Thus far he has printed and published probably 1,200 pages in German, and in parts of forty-eight pages, including cover, profusely illustrated by wood cuts. When finished the book will consist of about 1,600 pages (pages size same as in first book), illustrated by 1,500 wood cuts.

We have contracted to translate and publish the work in English in twenty parts, of about eighty pages each, at intervals of not less than sixty days, and at a cost of *one dollar cash, in advance, for each and every part.* When the enterprise is completed the twenty parts will sell, *unbound*, for *twenty dollars.* The binding will be extra. Subscribers can themselves have the parts bound, or have us bind them at extra expense; but it should be noted that no money will be saved by waiting until THE TREATISE is completed and bound.

We shall announce within some weeks when "PART ONE" will be ready for delivery.

Orders can be placed now, or later if preferred; and subscribers can send *one dollar* or *six dollars*, which latter would pay for six parts during a year.

We cannot accept any order that is not accompanied by the cash.

Every manufacturer of paper or pulp, every superintendent of a mill, every machine tender, every man whose life-work consists in making or selling paper in the United States, Canada, and all over the world, except Great Britain and the Continent of Europe, should send us his subscription. We will furnish each part postpaid. We will print and ship the English Edition for the European market, but cannot accept orders therefrom.

HOWARD LOCKWOOD & CO.,

Publishers, New York.

CHENEY BIGELOW WIRE WORKS,

SPRINGFIELD, MASS.

Cylinder Molds, Fourdrinier Wires,

DANDY ROLLS,

BRASS, COPPER AND IRON WIRE CLOTH.

CHAS. S. BARTON, President and Treasurer. LEWIS C. STONE, Manager.

RICE, BARTON & FALES MACHINE AND IRON CO.

(At Old Stand of Rice, Barton & Co.),

WORCESTER, MASS.,

—MANUFACTURERS OF—

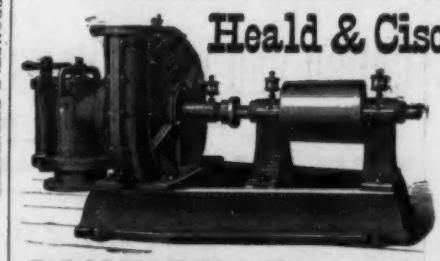
PAPER MACHINERY,

HILL'S PATENT SQUARE AND DIAGONAL CUTTERS,

Iron and Brass Castings, Chilled Iron and Paper Calender Rolls, Rag Engines, Rag Cutters, Steam Pressure Regulators, &c.

HYDRAULIC PRESSES, FROM 5 TO 14 INCH PISTON.

THE OLD RELIABLE Heald & Cisco Centrifugal Pump.



MORE OF THEM USED BY PAPER MAKERS THAN OF ALL OTHER KINDS COMBINED.

More than EIGHTEEN Thousand in Use.

CAUTION!—Other pump makers are advertising their wares as the "Baldwinsville" Centrifugal Pump. This claim is fraudulent and intended to deceive. We are the only manufacturers of Centrifugal Pumps in Baldwinsville, and we warn all purchasers against parties falsely claiming otherwise.

MORRIS MACHINE WORKS (formerly Heald & Morris), Baldwinsville, N. Y., U. S. A.

HENION & HUBBELL, Agents, 55 and 57 North Clinton Street, Chicago, Ill.

APPLETON WOOLEN MILLS.

MANUFACTURERS OF

PAPER MAKERS FELTS.

The only Mill west of Ohio.

We have demonstrated our ability to compete in

Fourdrinier, Press, Cylinder and Pulp Felts,

and solicit a trial order, especially for writing and book papers.

APPLETON, - - WISCONSIN.

DE WITT-ESTEY WIRE CLOTH WORKS,

NEWARK, - - OHIO.

NEW YORK STORE:
W. S. ESTEY,
71 Fulton Street.

Brass and Copper Wire Cloth of Every Description.

FOURDRINIER WIRES.

BEST QUALITY, HEAVY GRADE, PURE SILK EDGES.

Brass Wire Cloth

For COVERING CYLINDERS and WASHERS.

Dandy Rolls and Cylinders Made and Repaired.

Beware of Imitations.

BEST IN THE WORLD!

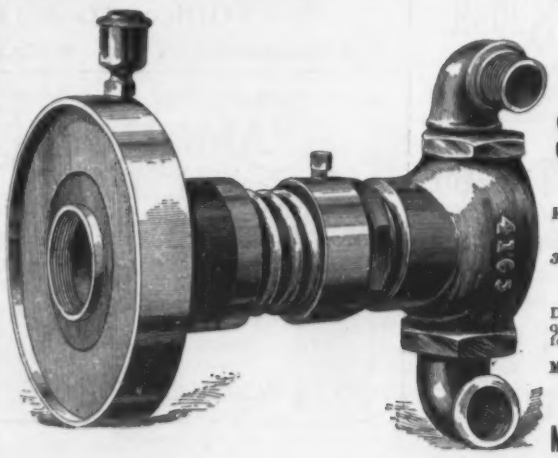
Called the STANDARD, as it is the PACKING by which others are compared.

THE IMPROVED JENKINS BROS. VALVES

Stamped with our Trade Mark

ARE GENUINE.

JENKINS BROS., 71 John St., New York, 105 Milk St., Boston. 21 North Fifth St., Philadelphia. 31 North Canal St., Chicago.



The ROACH PATENT METALLIC Steam Joint

Patented May 13, 1884, and Sept. 8, 1885.

For Rotary Paper Dryers and Revolving Cylinders.

3,000 NOW IN USE on PAPER MACHINES.

Does away with Packing the Dryers. No Leakage of Steam. Requires No Attention and will Last for Years.

Medal Awarded at World's Fair.

Send for Circular and Price List.

M. J. ROACH, ANDERSON, IND.

THE RICE KENDALL CO.,

Manufacturers and Dealers

IN

PAPER AND MILL SUPPLIES.

FULL LINE OF

News, Book and Fine Papers, Manilla Papers and Twines.

AGENTS FOR THE

American "Excelsior" Felts, Piece Felting and Jacketing,
Crocker's American Matrix Paper,
Crane & Co.'s Bond and Parchment Papers,
Crane Bros.' Ledger, Japanese and All Linen Papers,
Tileston & Hollingsworth Co.'s Plate Papers.

91 FEDERAL ST. BOSTON, MASS.

WATSON & CO.,

IMPORTERS OF AND DEALERS IN

Paper Manufacturers' Supplies.

AGENTS FOR

WHITEHEAD'S FELTS AND JACKETING,
CURTIUS' ULTRAMARINE,
EX. EX. EX. HEAVY DRYER CANVAS.

Vanderbilt Building, 132 Nassau Street,
NEW YORK.

ESTABLISHED 1876.

Dingee, Weinman & Co.

Lynchburg, Va.,

BARYTES

FOR PAPER MANUFACTURERS.

Mining and Manufacturing.

OPERATING ALL THE OLD

MINES

EAST OF THE MISSISSIPPI RIVER.

OPERATING FOUR

MILLS,

AND SUCCEEDING TO

JOHN MORRIS,
TANNER, BLISS & CO.,
JOHN LLOYD,
WEINMAN, MATTHEWS & CO.
AND VIRGINIA BARYTA CO.

WE MAKE 11 BRANDS,

COVERING ALL KNOWN USES OF

BARYTES.

G. A. CHENEY,

—IMPORTER OF—

PAPER STOCK AND SIZING,

58 & 60 Federal Street,
BOSTON.

E. HATTON & CO.,

—IMPORTERS OF—

Rags, Jute, Paper Stock

—AND—

WOOD PULP.

3 to 9 Beekman St. (S. W. Corner of Nassau), New York.

R. H. OVERTON & SON,

Times Building. Room 104, New York,

IMPORTERS, PACKERS AND DEALERS IN

Paper Makers' Supplies

PACKING WAREHOUSE,
246 BEDFORD AVENUE, BROOKLYN.

FELIX SALOMON & CO.,

BENNETT BUILDING,

Nassau, Ann and Fulton Sts., New York,

IMPORTERS OF AND DEALERS IN ALL GRADES OF

PAPER STOCK

AND

WOOD PULP.

H. C. HULBERT & CO.

No. 53 BEEKMAN STREET, NEW YORK,

IMPORTERS OF AND DEALERS IN

PAPER MAKERS' SUPPLIES.

Sole Agents for over Twenty-five Years for the sale of

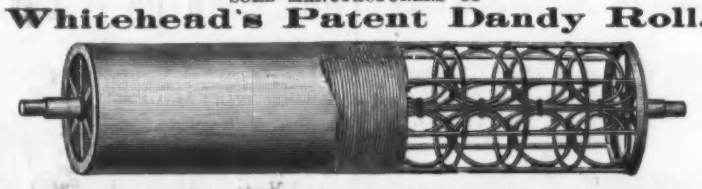
"STUBBINS VALE MILLS" FELTS and JACKETING,
PEARL HARDENING and "BERGER" ULTRAMARINE.

Agents for "REFINED ALUM" for Sizing and Bleaching.
CANVAS DRYER FELTS, Heaviest and Best, in all Widths.

DEWITT WIRE CLOTH CO., 32 Reade St., New York
703 Market St., Philadelphia.

SOLE MANUFACTURERS OF

Whitehead's Patent Dandy Roll.



Also Manufacture FOURDRINIER and CYLINDER WIRES. Cylinders and Dandy Rolls made and repaired. Lettering and Designing on Dandy Rolls executed neatly and promptly. Dealers in all kinds of Paper Mill Supplies.

ATTERBURY BROTHERS,

IMPORTERS OF AND DEALERS IN

Cotton and Linen Rags, Flax Waste, Bagging,

AND ALL KINDS OF PAPER STOCK.

MORSE BUILDING, 140 NASSAU STREET, NEW YORK.

FIDELITY PAPER CO., 902 BENNETT BUILDING,
97-99 Nassau Street, New York.

DRYER FELTS.

These Felts are running on over 500 Machines. Send for prices by yard or pound.

NATRONA POROUS ALUM,

FOR PAPER MAKERS' USE.

The Strongest and Purest Alum made and the only Alum made from Kryolith Alumina.

PENNSYLVANIA SALT MFG. CO.,

W. M. ELLICOTT & SONS, Baltimore, Md.
MOREY & CO., Boston, Mass.,
GEO. H. EMBREE, New York. } Agents.

115 CHESTNUT STREET,
PHILADELPHIA, PA.

Blood will tell.
So will Alum.

The color of your product will either enhance or depreciate its market value.

Good Alum.	Poor Alum.
Good Color.	Poor Color.
Good Price.	Poor Price.

Write for information about Pearl Alum to

HARRISON BROS. & CO.

PHILADELPHIA. CINCINNATI. NEW ORLEANS. NEW YORK.

STANIAR & LAFFEY,

MANUFACTURERS OF

FOURDRINIER WIRES,

CYLINDER MOLDS,

DANDY ROLLS,

Brass, Copper and Iron Wire Cloth,

Nos. 11-19 PASSAIC AVENUE, EAST NEWARK, N. J.

JOHN H. LYON & CO.,

—IMPORTERS AND DEALERS IN ALL GRADES OF—

PAPER STOCK,

And Dealers and Packers of all Grades of

WOOLENS FOR SHODDY AND FLOCK PURPOSES.

Office: 10 & 12 Reade Street,

WAREHOUSE: 35 PARK STREET, NEW YORK.

CAMERON STEAM PUMP

SIMPLE, RELIABLE, COMPACT, DURABLE.

NO OUTSIDE VALVE GEAR.

ADAPTED FOR ALL PURPOSES.

THE A·S·CAMERON STEAM PUMP WORKS·

FOOT OF EAST 23d STREET, ·NEW YORK·

BULKLEY, DUNTON & CO.,

Nos. 75 AND 77 DUANE STREET, NEW YORK,

"EXCELSIOR" FELTS PIECE FELTING and JACKETING

For Economy, Durability and Good Results they are Unequaled. Long Established and Well Known. A Trial is Solicited from Manufacturers not already Using them.

EXTRA HEAVY CANVAS DRYERS.

SATISFACTION GUARANTEED. SEND FOR PRICE LIST.

Wm. Cabble Excelsior Wire Mfg. Co.

No. 43 Fulton Street,
NEW YORK.

MANUFACTURERS OF

Superior Fourdrinier Wires,
Cylinder Wires,
Brass, Copper and Iron Wire Cloth of every description.

Brass, Copper and Iron Wire,
Dandy Rolls,
Cylinder Molds,
Best Quality of Wire Rope.

WRITE FOR PRICE LIST.

EASTWOOD WIRE MFG. CO.,

BELLEVILLE, N. J.,

—MANUFACTURERS OF—

FOURDRINIER WIRES WITH PATENT SAFETY EDGE.

Improved Patent Dandy.

Patented August 12, 1884.

BRASS, COPPER AND IRON WIRE CLOTH OF EVERY DESCRIPTION.

☞SEND FOR SAMPLES AND PRICES.

ESTABLISHED 1826.

LEWY BROTHERS,

German and Russian Linen Rag Packers,

BERLIN and KOENIGSBERG, Germany.

MORSE BUILDING, No. 140 Nassau St., New York.

RODNEY HUNT MACHINE CO

Engineers Machinists Iron and Brass Founders.

IRON FLUMES & PENSTOCKS. **TURBINE WATER WHEELS** VERTICAL and HORIZONTAL

CLOTH HEAD GATE GEARING, REGULATORS and everything pertaining to WATER WHEELS & MILL WORK

BOSTON OFFICE, 70 KILBY ST. CATALOGUE FREE **FINISHING MACHINERY** INCLUDING Rotary Fulling Mills, Cloth Washers Dolly Washers for Hosiery Goods, Crank Fulling Mills, Wool Washers, Dusters, Gigs, Dye Tubs, Blue Vats, etc. ORANGE, MASS.

ALSO ROTARY FIRE PUMPS, UNDERWRITERS' SIZES.

ROLLS OF ALL KINDS GROUND BY "POOLE" PROCESS.

Machinery and Machinery CASTINGS OF ALL KINDS.
Pattern Making and Job Work Desired.

PAPER DRYERS.
PAPER AND PULP MACHINERY.
SEND FOR GEAR CATALOGUE.

We are fully equipped to build light and heavy **SPECIAL MACHINERY** And would be pleased to furnish estimates.

THE TOWNSEND FURNACE AND MACHINE SHOP,

RUFUS K. TOWNSEND, Proprietor. **ALBANY, N. Y.**

C. K. WILLIAMS & CO., EASTON, PA.,

Miners and Manufacturers of Mineral Pulp, American Talc, Agalite Royal Hardening, Keystone, Imported and American Clays, Yellow and Chrome Ochres, Venetian Reds, Red Oxides, &c.

PUT UP IN PACKAGES TO SUIT THE CONVENIENCE OF PAPER MAKERS.

TRADE MARK.

ESPECIALLY ADAPTED FOR *PAPER MAKERS' USE.*

T. P. SHERBORNE, Jr. J. B. WILSON.

STAR CLAY COMPANY

MINERS AND MANUFACTURERS OF **White China Clay.**

TRADE MARK.

OFFICE AND WORKS:
Mertztown, Berks County,
PENNSYLVANIA.

ESPECIALLY ADAPTED TO PAPER MAKERS' USE.

LOCKWOOD PRESS, 126 and 128 Duane Street, cor. Church, New York.